IRON TRADE REVIEW AND WESTERN MACHINIST

VOLUME XX. CLEVELAND, O., APRIL 2, 1887. NUMBER 14.

26″ BACK-GEARED AND POWER FEED DRILL.

This drill is made from entirely new patterns with all the best and latest improvements. It has power feed, quick return, and balanced head and spindle. It is heavily braced from top to base at the rear, giving great strength and rigidity, and preventing the column from being forced backward during the strain of heavy drilling.

All gears are cut. The large bevel wheel is 8″ in diameter, geared two to one. The column is 7½ feet high; swings 26″; table 24″ in diameter; from table to end of spindle 38″; from base to end of spindle 52″, The spindle is of forge steel 1 13-16″ in diameter and is bored to fit No. 4 Morse taper.

The cone pulleys have four changes 7x9, 11 and 13 inches in diameter for 3″ belt. There are tight and loose pulleys, 12″ in diameter, 3½″ face. They should run 270 revolutions. The weight of the drill is 1,800 lbs.

The manufacturers, Lodge, Davis & Co., of Cincinnati, Ohio, direct attention to the extra sizes of cone pulleys and spindles for this size of drill; also to the feature of the back brace, which is put on all the sizes of drills made by them, namely, 20″ lever, 20″ wheel feed, 20″ sliding head, 24″ wheel feed, and 26″, 30″ and 38″ back-geared and power feed drills.

Possibilities of 75 Cents Worth of Iron Ore.

A correspondent of the Bethlehem (Pa.) *Times* says on the authority of Dr. George Woods, of Pittsburgh, that—

Seventy-five cents worth of iron ore made into—

Bar iron is worth	$ 5.00
Horseshoes	10.50
Table knives	180.00
Fine needles	6,800 00
Shirt buttons	29 4 0 00
Watch springs	20 , 00 00
Hair springs	400 000.00
Pallet arbors	2,577,595.00

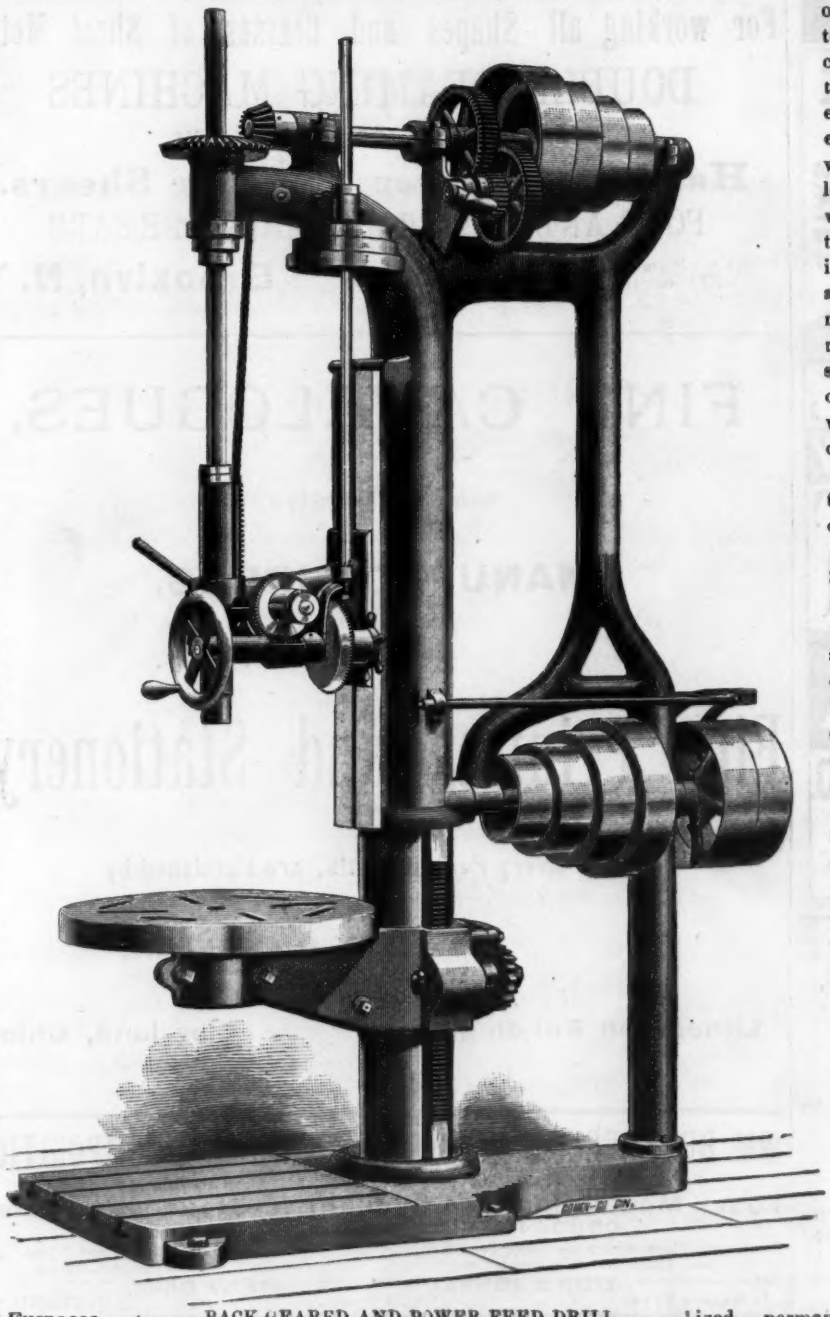
There is much, very much, in the above estimate that should receive the attention and consideration of our capitalists. Said John S. Clark, of Boston, in an address before the Franklin Institute of Philadelphia, in 1881: "I hold in my hand a piece of steel. Its value is, perhaps, five cents; and yet it may be said to represent hardly more than so much raw material. In this hand I hold another piece of steel of similar quality, but less quantity, and yet this latter has a value of $20. What makes this difference in value? Simply this, that human thought has been playing as it were, about this latter piece of steel, and has made it the basis upon which it has concreted itself so that we have an instrument of great practical use —a micrometer caliper—mainly the product of thought as expressed by skilled labor."

Petroleum Successfully Used in Glass Furnaces.

A Canton, O., special dated March 7 says: J. K. Brown, the general manager of the Canton glass works, has discovered, and is using successfully in the works gas manufactured from petroleum. The gas is used in the ovens. The burner consists of one section for the the oil and another for the steam, and near the point where these sections join is an aperture for the admitting of air. The heat made by this fuel in a tempering furnace is 1,200 degrees. It requires a heat 1,400 degrees to melt glass, and in finishing the furnace heat made by gas is from 2,400 to 2,600 degrees. With this fuel as much steam can be made out of two boilers as with three with coke. A barrel and a half of oil is equal to a ton of coke. The latter costs $4.50 and the oil $1, making a saving of $2.50 for every ton of coke required. In the use of coke the ware is covered with smoke, but with gas it is so free that cleaning is unnecessary. Glass manufacturers from other cities are here inspecting the discovery and its workings.

A Practical President.

There is a president of a tool building company in one of our cities, says a contemporary, who is a thorough mechanic and a successful inventor. In one of the draughting rooms is a table, with square, rule, pencil, and a few other appliances always on it. Perhaps this table may be visited three or four times a day by the president, who will jot down figures, draw a few lines, or make a sketch. He may not come for several days, and he may work at the board or table for several hours at a time. At last the work is thought out, and its elusiveness is fixed by the pencilling. The result is then properly drawn, patterns are made, the castings are finished, and the machine is completed. All this is the process of thought—growing, lasting perhaps for weeks or months. During that incubating time the idea possessed the inventor in as true a sense as that he possessed the idea. Probably no merely literary effort required greater devotion to its subject, more intense thought, or more exercise of the reason and judgment.—[English paper.



BACK-GEARED AND POWER FEED DRILL.

IS THE IRON BOOM REACHING VIRGINIA?

Bulletin of the American Iron and Steel Association.

The Southern iron boom, which at first embraced only the Birmingham district of Alabama and the Chattanooga district of Tennessee, has now spread to Anniston, Sheffield, and Selma in Alabama, to Rome in Georgia, to Nashville in Tennessee, and to various other places in these States too numerous to mention. All the lines of telegraphic communication with the South, various trade newspapers, and several technical essays have kept the country fully informed of the character and progress of this wonderful boom. We have ourselves collected some statistical data concerning it which will appear in due time. It is certainly a marvelous industrial phenomenon in its scope, its propositions, its intensity, and its tenacity. The development of natural gas in and around Pittsburgh may be productive of less important consequences to the iron industry of the country at large than this Southern boom, which has evidently not yet reached its culmination or fixed its boundaries.

The indications that the boom is about to make itself felt in Virginia are numerous. Large *bona fide* investments in the extensive iron ore and coal lands of Southwestern Virginia have recently been made for the purpose of immediate development; a new and large blast furnace at Pulaski, in this district, is already in course of erection; the ore of the district is excellent for foundry purposes, and the coal makes a superior coke, and a large demand for it is sure to be created as soon as it can be put in the market; at Roanoke an inducement of a cash bonus of $50,000 and exemption from the payment of taxes has been offered to responsible persons who will establish a rolling mill; at Richmond our friend Blankenship is about finishing the first Bessemer steel plant in Virginia; and lastly among the new Virginia enterprises that occur to us is the rumored sale during the past week to Pittsburgh capitalists of a $100,000 interest in the Van Buren Furnace property, near Woodstock, which is expected to result in the active development of its manganiferous and other iron ores, which are embraced in a tract of several thousand acres.

Iron Roofers in Council.

The National Iron Roofers' Association met at Cincinnati, March 22, and organized permanently by the election of the following officers: President, W. A. Dietrick, of Cincinnati; vice-president, James A. Miller, of Chicago; secretary, R. J. Hyndman, of Cincinnati; treasurer, C. N. Avery, of Cincinnati, Ohio. The Executive Committee is constituted as follows: T. C. Snyder, of Canton, Ohio; G. E. Needham, of Cleveland, Ohio, and Wm. A List, of Wheeling, W. Va. It was agreed that the annual meetings of the association shall be held the second Tuesday in January of each year. Special meetings may be called at any time at the option of the Executive Committee.

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SIMPLE
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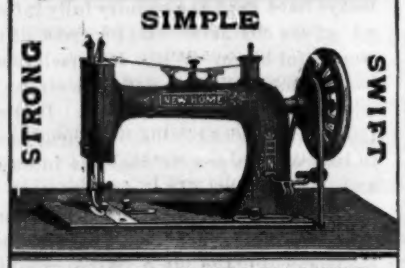

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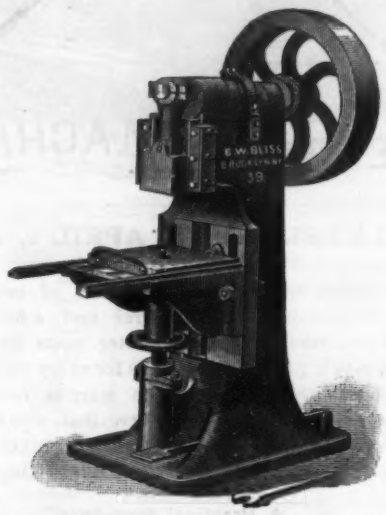

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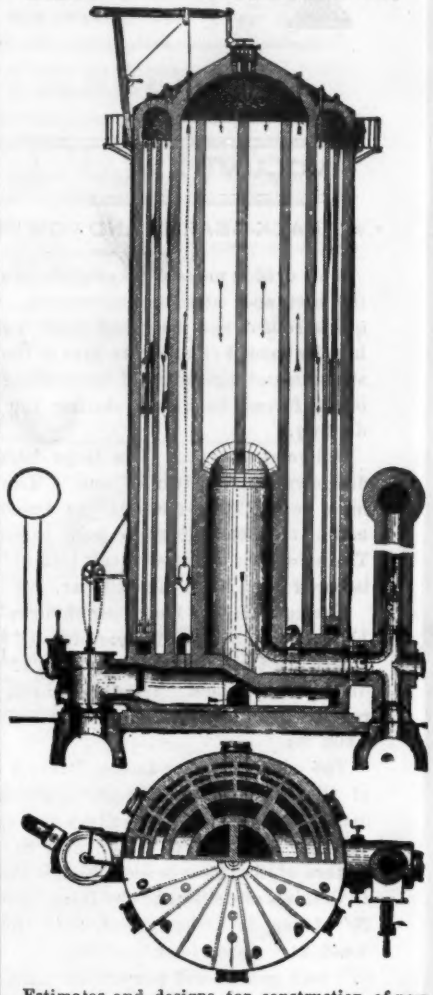

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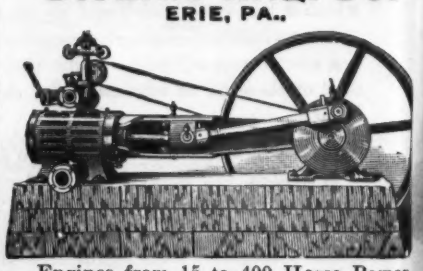

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8 WORKS AT ERIE, PA.

IMPROVED MAN-HOLE COVER FOR BLEACHING KIERS.

Our illustrations show an improved form of fastening for man-hole covers of bleaching kiers and similar vessels, which was designed by us some time ago, and has given perfect satisfaction wherever it has been applied.

In putting on and taking off plates of this sort, there is always need of some sort of provisional fastening which shall hold the plate firmly in place, while the attendant is putting in or removing the bolts which are necessary to sustain the steam pressure. It is usual to make some sort of a detachable yoke, like that used on an ordinary man-hole, but the use of this is attended with inconveniences which it is desirable to avoid. In the fastening shown in the illustration, the man-hole cover is provided with two deep bosses, into which a-thread is cut as shown. For greater convenience in use these threads may, and should be, left-handed. Screws, furnished with hand wheels, run into these bosses and carry the yokes, as shown clearly in the cuts. When it is desired to remove the plate, the bolts are taken out in the usual manner and laid aside. The yokes are then loosened by simply giving the screws a turn or two by means of the hand wheels, and swung around side-wise so that the hooks on their ends come into the slots in the frame shown at A A′ and B B′ in Fig. 2. This allows the plate carrying screws and yokes to be swung back on the hinges, and everything is clear. The hinges have holes elongated vertically, to enable the plate to adapt itself to different thicknesses of packing and always come to a firm bearing.—[The Locomotive.

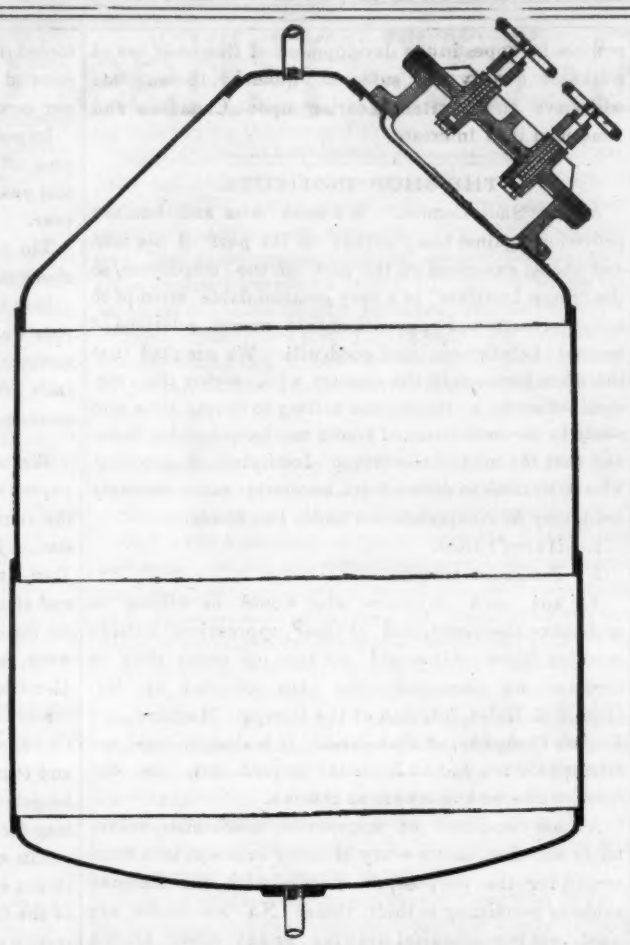

FIG. 1.—MAN-HOLE COVER FOR BLEACHING KIERS.

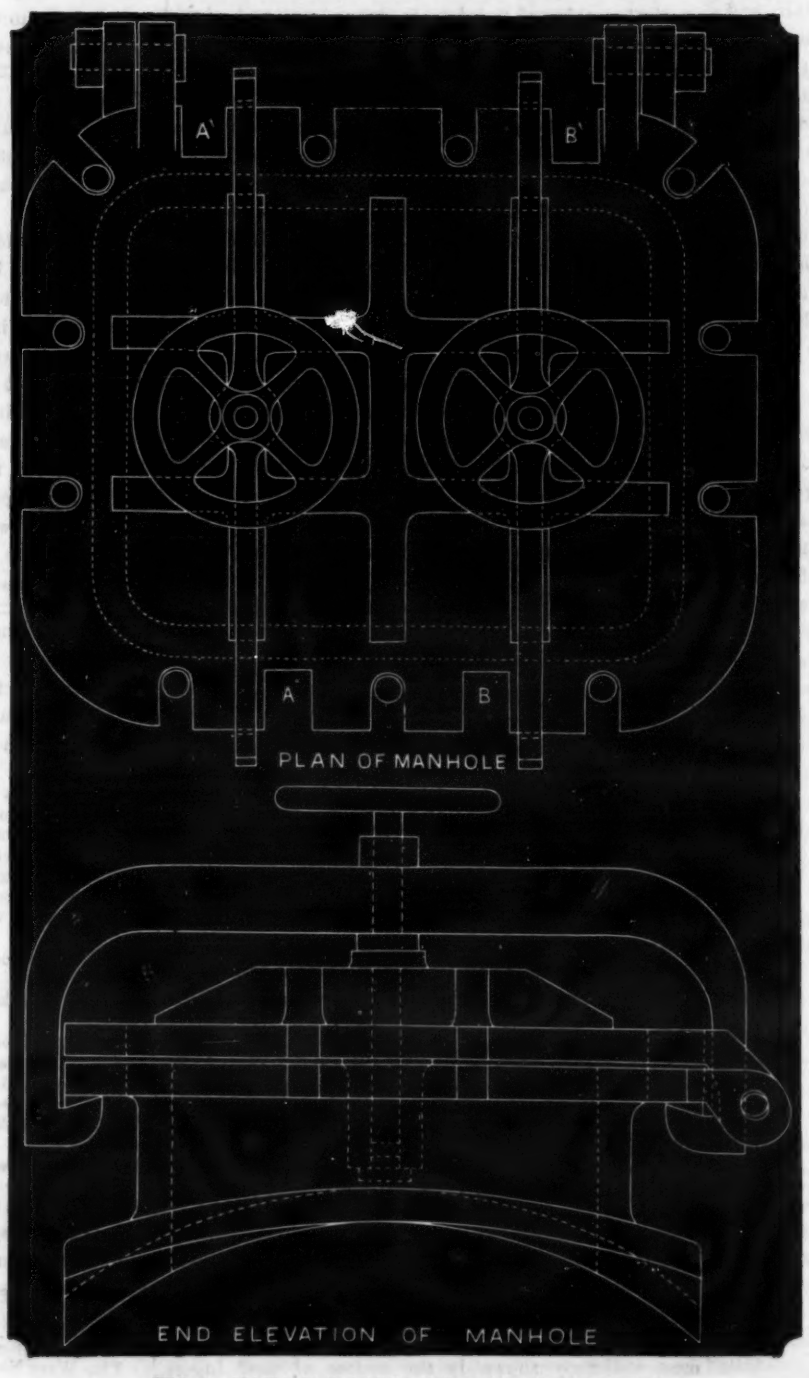

FIG. 2.—MAN-HOLE COVER FOR BLEACHING KIERS.

THAT NEW PROCESS OF TEMPERING STEEL.

Reference has heretofore been made in these columns to a wonderful new process "of tempering steel," invented by a Louisville blacksmith. It is evidently to the same process that the following Washington dispatch of March 24 refers: Two Kentuckians—one a blacksmith—recently called at the Navy Department and announced that they had discovered a process of treating steel which, if their claims are borne out by the facts, will practically revolutionize the art of steel-tool making. They did not divulge the nature of the invention further than to intimate that it related to the chemical bath in which the tool is immersed in the tempering process The callers asserted that by their method of treatment the commonest grades of metal, such as shear or cast steel, could be so tempered in the matter of hardness and toughness as to fully equal the best grades of tool steel. An ordinary pair of cheap cast-steel scissors could be treated without disconnecting the blades so as to cut and hold an edge as well as the best English tool steel shears.

An experiment was made on the blade of Secretary Whitney's pocket-knife with the result that it was possible to cut or whittle an ordinary steel key without apparent injury to the blade. Moreover, the result of the treatment are asserted to be so under control that it is possible to temper steel to any degree of hardness or toughness that may be required by the use for which it is intended. So impressed was the Secretary by the claims of the inventors that after consultation with the Chief of the Bureau of Ordnance he decided to permit the process to be tested experimentally at the Washington Navy Yard. Commodore Sicard accordingly ordered specimen bars of steel to be prepared, and the experiments have already been begun.

THE LARGEST ROLLING MILL ON EARTH.

Pittsburgh Times, March 26.

The plans for the new universal mill to be erected by Carnegie, Phipps & Co., adjoining their steel plate mill at Homestead, are now complete and bids for the work are being invited. The mill is to be built immediately and will probably be completed before the end of the year. Every detail of the mill was designed at the works. This is the mill which the company intended to erect with a view to filling the Government armor plate contract, and, although it finally decided not to bid for the work, the mill will still be adapted for that class of work.

The dimensions of the building have not yet been decided upon, but it will be somewhat wider than, although not as long as, the plate mill which is 963 feet long and 80 feet wide with two wings 15 feet wide. The horizontal rolls in the universal mill will be 75 inches in diameter, with special provisions made to put in longer rolls if necessary. The vertical rolls will be 20 inches in diameter and 18 inches long with tables 37 feet long on each side, consisting of exceptionally heavy rollers and massive driving gear.

The vertical and horizontal rolls will be separately driven by independent engines of special design, which are now being made by E. P. Allis & Co., of Milwaukee. The pair of engines driving the vertical rolls will be 30 inches in diameter of cylinder and have a 54-inch stroke. Those for the horizontal rolls will be 40 inches in diameter of cylinder and have a 60-inch stroke. The heating furnaces, of which there will probably be six, will probably be operated by Julian Kennedy's patent, charging crane, which is now operating successfully inthe plate mill. A special hydraulic shearing machine also designed at the works, will be used.

The rolls will be capable of rolling ingots up to 30 tons weight. The capacity of the mill will vary greatly according to the class of steel produced, but it will exceed that of any universal mill in the world. Railroad switches from both the Pittsburg, McKeesport and Youghiogheny and the Pittsburgh, Virginia and Charleston railroads will run into the mill, and the company has a large river frontage for shipment on barges.

The mill will give employment to about 300 men.

A New Iron and Coal Company in Tennessee.

The organization of the Chattanooga Land, Coal, Iron and Railway Company was completed March 22.

The company has purchased 25,000 acres of land in and around Chattanooga, including 10,000 acres on Walden's Ridge, famed for the richness of the mineral deposits. A contract has been let for the immediate building of a railroad to the top of the ridge, giving the first railroad connection to Cumberland Table. Cars are tobe running in four months. Three bridges will be immediately built across the Tennessee River; two blast furnaces and 500 coke ovens will be immediately erected, and four other furnaces are being contracted for. The company is capitalized at $12,000,000. J. W. Adams, a leading capitalist, is president; T. G. Montague, president of the First National Bank, is vice-president; and H. Clay Evans secretary.

"The Story of the Merrimac and the Monitor" the first of General Adam Badeau's "War Stories for Boys and Girls," with its graphic descriptions and spirited illustrations, is one of the prominent features of the April *St. Nicholas*.

IRON TRADE REVIEW
AND WESTERN MACHINIST

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ENTERED AT THE POST OFFICE AT CLEVELAND, O., AS SECOND CLASS MATTER.

CLEVELAND, O., APRIL 2, 1887.

A COMBINATION ON CANADIAN ORE.

Our readers are sufficiently informed from previous issues of the IRON TRADE REVIEW as to the extensive railroad and iron interests in Canada of the syndicate composed of Senator H. B. Payne, Judge Stevenson Burke, S. J. Ritchie, and Wm. Chisholm, of Ohio, and other leading capitalists in New York and Canada. It will be remembered that they secured control of a large tract of mineral land in the county of Hastings, constructed the Central Ontario Railroad, running 80 or 100 miles northward from Lake Ontario, and built extensive ore docks at the natural harbor in Weller's Bay. Unfortunately the iron ore taken from the principal mine of the syndicate (the Coe Hill mine), and shipped to Cleveland, did not show good results in the blast furnace, being too high in sulphur and requiring to be calcined before using. In consequence of this, shipments from Weller's Bay fell off last year to a mere nominal figure.

Meanwhile the syndicate, now known under its Ohio charter as the Anglo-American Iron Company, has not been idle, as many supposed. By special act of Parliament it has been granted rights and privileges which are considered very valuable, and under this authority has gone ahead to prospect the country to the north and west of the present terminus of its road. As the result of investigations made by a corps of surveyors, and reports submitted within the past month, the company has, we are informed by Mr. S. J. Ritchie, decided to extend its road northwestward from Coe Hill a distance of from 140 to 150 miles until it forms a junction with the Canadian Pacific Railway at North Bay, on Lake Nipissing. The country thus opened up is penetrated by no other road and is said to contain large deposits of Bessemer ore and to be well timbered. As to the working quality of the ore it is yet too early to speak, the surveyor's reports thus far covering mainly the question of timber. Work on the railroad, Mr. Ritchie states, will be commenced within the next six weeks and will be pushed through to completion.

As a necessary corollary to its railroad projects, the syndicate has, we are informed, secured control or effected a consolidation of about all the iron mining properties in Canada. Its authorized capital is $10,000,000, $5,000,000 of which is for the railroad. It has now under its control, if we are correctly informed, about 200,000 acres of land. Recently there has been formed a Nova Scotia syndicate, with $50,000,000 capital, to be known as the Coal and Iron Association of Canada, the alleged object of which is to oppose the operations of the American syndicate. So far from this being their object, Mr. Ritchie states that the Nova Scotia organization is in sympathy with the Anglo-American Iron Company.

If the above projects are carried out and the syndicate realizes its hopes in the development of Bessemer ore of workable quality and sufficient quantity, the outcome will have an important bearing upon Canadian and American iron interests.

THE SHOP INSTITUTE.

As the "Shop Council" is a most wise and humane provision against hasty strikes on the part of the men and unjust exactions on the part of the employers, so the "Shop Institute" is a very commendable attempt to bring foremen and apprentices into nearer relations of mutual helpfulness and good-will. We are glad that there are foremen in the country who, seeing the wisdom of such a course, are willing to devote time and study to the instruction of young mechanics under them, and that the idea of the "Shop Institute" is growing. The objections to such efforts, no doubt often sincerely held, may be comprehended under two heads:

1. Haven't time.
2. Too much trouble.

To any such objectors, who would be willing to undertake the instruction of their apprentices outside working hours if it would not take too much time or trouble, we commend the plan adopted by Mr. George S. Rider, foreman of the Prospect Machine and Engine Company, of Cleveland. It is simple, does not attempt too much, and is easily carried out. Its distinctive characteristics are as follows:

A class composed of apprentice machinists, voluntarily enrolled, meets every Monday evening, in a room rented for the purpose, to discuss with the foreman subjects pertaining to their trade. No text-books are used, nor is mechanical drawing or any other branch made a specialty; but any subject connected with the practical working of the shop is taken up, and thus, in the way of a mechanical talk, with the aid of a blackboard, the foreman explains the best machine shop practice of the day. These talks are entirely informal and cover a wide range of subjects. The use of the vernier and micrometer calipers; the best methods of roughing out and finishing work; the varying degree of accuracy required on different jobs; valve motion, etc., form subjects for most interesting and instructive talks; and any intelligent foreman can extend the list indefinitely.

Several results will be sure to follow such efforts, if faithfully carried out:

1. Without missing the time or feeling the extra trouble to be a burden, the foreman or superintendent will find that he is accomplishing a great deal of good not only for the young men but also for himself, in that by putting his knowledge into language he obtains a more clear and ready expression of his ideas, while over and above all, he has the consciousness of doing something for others.

2. The effect upon the young men will be three-fold. In the first place, they will know more when they get through; secondly, they will do better work, and thirdly they will have more respect for their foreman and themselves.

3. The effect upon the shop will be: more intelligent work, better discipline, and more remunerative returns to both proprietors and employes. It is a significant fact that, according to Mr. Rider's observation, the results of this simple project in his shop are plainly seen in better work, better discipline and easier management. Let others try it.

HOW THE NEW YEAR STARTS OUT.

Our imports of iron ore still show a considerable increase over last year. For January, 1887, they were 102,006 tons, against 75,133 tons during January, 1886.

There was a dropping off in pig iron imports during January, in comparison with one year ago. The figures are: 1887, 16,614 tons; 1886, 21,217 tons.

A year ago we imported no steel rails during January; our imports of this article during January, 1887, were 8,101 tons.

There is a steady flow of scrap iron to this country. In January, 1886, we imported 2,103 tons, while in January, 1887, the imports were 14,580 tons.

The increase in our importations of iron and steel is most strikingly shown in the matter of steel ingots, blooms, billets, etc. During January, 1886, our imports footed up 9,596,100 pounds; during January, 1887, they jumped to 48,842,694 pounds, an increase of over 500 per cent.

Importations of cotton ties, etc., appear to be dropping off. There were none imported during January of this year, as against 537,667 pounds in January of last year.

Tin plates, wire rods, wire, bar iron, etc., maintain about the same volume this year as last.

Our iron and steel exports during January of this year were so small that they are worth while here inserting: Pig iron, 40 tons; bar iron, 900 pounds; steel rails, 160 tons; sheet iron, 80 pounds; tinplates, 25,916 pounds.

WE observe an article now going the rounds of the papers regarding "A Cat on a Fly-wheel." This time the venturesome feline is located in an electric lighting station in Brooklyn. Isn't it about time to give poor Tom a rest? With only slight changes as to locality and circumstances the same item has been a staple article for clipping for the past ten years or more. One week, in Cincinnati, he travels 300 miles at the rate of 45 miles an hour and drops off in a limp and sell-me-out-for-five-cents condition; the next week finds him in Chicago, clinging for ten hours to the rim of the wheel and then hopping off at night as chipper as ever; anon he gets a free ride in Detroit and, attempting to take a leap for life, strews the engine floor with yowls and violin strings; next he turns up in Denver with a sore throat and watery eyes, ready to go to sleep on the rim of the first fly-wheel that offers. If this thing doesn't stop, we shall next hear of his taking a trip from New York to Chicago on the drive-wheel of a locomotive and yet surviving to tell an admiring feline audience of his wonderful achievement.

THE clearest explanation we have yet seen of the long and short haul clause of the new Inter-state Commerce Law (Section 4) appeared recently in the *Wall Street News*, in the following form:

A 1 *b* *c* 2 D

The law forbids a greater charge in the aggregate for carrying, say, a barrel of flour from *b* to D or from *c* to D than from A to D. So far it is perfectly plain. But the next point is, Does it forbid a greater charge for carrying the barrel between 1 and *c* than between 1 and 2? or between *b* and *c* than between 1 and 2? One party will insist that it does and another that it does not. The matter will have to be decided by the railroad commissioners, subject to the adjudication of the courts. Undoubtedly the governing principles in the interpretation of the section will be the requirements that the shipments must be "under substantially similar circumstances and conditions."

THESE are, indeed, great times for speculation in iron and coal lands. It is not all confined to the South, by any means, but the following headlines from a recent issue of the Chattanooga *Times* shows that that section is determined not to be behind, at any rate:

STUPENDOUS.
Chattanooga Land, Coal, Iron and Railway Company.
The Most Gigantic Company Yet Organized in the South.
THE CAPITAL STOCK, $12,000,000.
The Full Details of the Operations and Organization.
The Magnificient Designs of the Corporation.
Three Bridges to Span the Tennessee at Chattanooga.
The Chattanooga Western to be at Once Built to the Top of Walden's Ridge.
Two Blast Furnaces to be Erected at Boyce Station, Near the City.
Two Hundred Coke Ovens to be Built Immediately Opposite the City.
One Hundred Thousand Dollars to be Expended in Laying Out a New City Across the River.
Water Works, Gas Works, Electric Light, Street Railway, Dummy Lines in Contemplation.
Full Details of the Conception of the Mammoth Enterprise. Who Form the Corporation.
How It is Managed. Sale of Preferred Stock to Take Place on Wednesday, March 30.
How the Stock is to be Protected. The Officers of the Company.

It is very easy to announce big prospects "in contemplation," but to make them materialize requires an article which is usually spelled with a *c*, an *a*, an *s* and an *h*.

The Wire Nail Association held a meeting, in this city, on Thursday and Friday of last week. Prices were re-

affirmed, and a reorganization of the meeting was discussed. A committee was appointed to draw up a plan, which is likely to be based on the allotment system. It was reported that the orders booked for future delivery were comparatively small in volume, the aggregate being somewhere between 35,000 and 49,000 kegs. Quotations are $3.60 at mill, less 25c. in carload lots.

WE heartily welcome to the ranks of trade journalism our old friend, Captain Alfred E. Lee, President Hayes's Consul-General to Frankfort, Germany, and a journalist of high attainments. He is the able editor of our young but vigorous contemporary, the Columbus (O.) *Trade Review*.

THE copper fire boxes that have been put in some of the locomotives on the Union Pacific, because of the bad feed water, have corroded very rapidly on account of the large amount of sulphur contained in the Iowa coal that is used —[Railway Appliances.

THE fastest time ever made between New York and San Francisco, was 82 hours and 24 minutes. The distance is 3,318 miles, and the average rate of speed was 40.18 miles an hour.—[Albany Evening Journal.

RAILWAY ties only last from one-fourth to one-tenth of the time required to grow them, and the forests are now being rapidly cut to furnish the supply.

Krupp is extending his gun factory to fill large orders for the German Government.

A recent purchase of 21,000 acres of mineral lands, which is only one of many, was secently made in Virginia, on which furnaces and mills will be erected.

The British steel manufacturers are raising a great hubbub because the Government is preparing to make its own steel with its own steel plants in its arsenals. The Sheffield manufacturers want the work.

Gas fuel is gaining ground. A locomotive works and a rolling mill at Paterson, N. J., will use it. Jersey City manufacturers are preparing to introduce it, and in several other cities East the economy of the system is being carefully studied.

We have received from G. W. Ogilvie, publisher, 216 Lake street, Chicago, Ill., a copy of the 1887 Edition of *Conklin's Handy Manual of Useful Information*, a neat book of 288 pages of closely printed matter, with information on over 2,000 subjects. Its statistics are brought down to date. Mailed to any address on receipt of 25 cents.

The Miner and Manufacturer, recently inaugurated at Milwaukee, Wis., under very favorable auspices, is in all respects a very creditable publication—bright, newsy and well arranged. Mr. C. S. Osborn, the editor, is well adapted by natural ability and journalistic training to furnish the mining industry of the Northwest with a paper of which they should be proud.

Scribner's Magazine for April opens with a number of unpublished letters of Mr. Thackeray's written to Mr. and Mrs. Brookfield, English friends of his, with whom he was intimate. Mr. Washburne brings to a conclusion his admirable history of the Paris Commune. Lieut. Hughes has an illustrated article on modern aggressive torpedoes. Prof. Hill, of Harvard, discusses the instruction in English that is given in our colleges. The continued novels in this magassine maintain the attractiveness with which they began.

The opening article of the April *Century* is also the beginning of the series of papers on English Cathedrals, the introduction to which was printed in the March number—the text being by Mrs. M. G. van Rensselaer and the illustrations by Joseph Pennell. Mr. Joel Chandler Harris is the author of a story in this number entitled "Little Compton," the scene of which is laid in Georgia. The "Life of Lincoln" is this month devoted to "The Territorial Experiment (that is to say, the Kansas difficulties). Mr. Lathrop contributes an article on "Some Portraits on Hawthorne," apropos of the photograph by Mayall, of London. Edward Atkinson, Esq., writes on "The Eargin of Profits," considering the question whether capital is securing an undue share of the joint product of labor and capital. Mark Twain appears in this number in a new role—that of a humorous critic of the methods of popular education, in an article entitled "English as She is Taught." Gen. D. H. Hill contributes the leading war article.

ACTIVITY IN LAKE SHIPBUILDING.

We are glad to see in the *Iron Age* of this week the following recognition of the growth of the shipbuilding industry on the Great Lakes:

Navigation on the Great Lakes has its periods of activity and depression in common with the condition of general trade in this country. Two years ago vessel property was at a great discount. The Lake carrying trade been so unremunerative for several seasons that vessel owners were almost in despair. Those whose interests were not too deeply involved in the business sold out, while others simply hung on with a faint hope that something might occur to reverse the condition of affairs and enable them to recover their losses. A few steam vessels of large capacity and improved design were ordered from the Lake shipbuilders by parties whose business relations compelled them to use this channel of transportation, but such orders were in sufficient to keep the shipyards in steady operation, and, in fact, quite a number of them were practically idle for years. During last season, however, a change came over the condition of affairs, which was due very largely to the improved condition of the iron trade and the demand for vessels to carry the increased quantity of Lake Superior iron ore that was needed. At the close of navigation vesselmen figured up their profits, and it is asserted by the Chicago *Tribune* that in many cases it was found that their net earnings amounted to fully 25 per cent. of the capital invested. Such a showing had its natural effect. Vessel property rapidly advanced in value, the appreciation having been fully 20 per cent. in the past 18 months. A navigation boom was inaugurated, and it is now in full blast.

The outlook for the coming season's carrying trade is so flattering that vesselmen have not only advanced their rates very considerably, but they have generally concluded that more ships can be profitably employed. They have therefore, rushed their orders into the shipyards from Buffalo to Milwaukee, and shipbuilders are now as busy as bees, hurrying to complete as many vessels as possible in time to catch at least a portion of the coming season's traffic. The vessels which are now being built are not little schooners, such as were turned out in former days, but almost all of them are large steamships, averaging over 2,000 tons in carrying capacity. A number of them will have wooden hulls, but the largest and finest vessels will have steel hulls, while their appointments are generally of the most approved style of marine architecture. Great strides have been taken in this respect by the lake shipbuilders during the past few years, and their work will not suffer when compared with that of the seaboard builders.

The greatest activity in lake shipbuilding is at Cleveland, Ohio, where 16 vessels are in process of construction at the present time. Next in importance are Detroit and Bay City, Mich., at each of which places nine vessels are under way. At Buffalo, N. Y., three steamships are being built, and the same number at Trenton, Mich. At Milwaukee, Wis., two are under construction, while at a number of small ship yards at various locations on the lakes single ships are being built. The Cleveland vessels will cost from $120,000 to $265,000 apiece, and will each carry from 2,000 to 3,000 tons of freight. The Detroit vessels are of greater variety, ranging from 120-ton barges to 2,650-ton steamships, and costing from $75,000 to $275,000. The Buffalo vessels are all large, from 2.000 to 2,800 tons, and will cost from $135,000 to $300,000. An estimate of the total number of lake vessels now being built, their carrying capacity and cost is as follows:

Port.	No.	Tons.	Cost.
Cleveland	16	36.500	$2,340,[illegible]00
Buffalo	3	7 600	7[illegible]5,000
Detroit	9	16,[illegible]00	1,30[illegible]0
Bay City	9	18,600	1,0[illegible]0,00
Trenton	3	5,806	315,000
Marine City	1	2,300	120,000
St Clair	1	2,400	130,000
Milwaukee	2	4 500	270,000
Grand Haven	1	2.500	130,000
Mt. Clemens	1	200	40,000
Baraga	1	1,600	35,000
Total	47	98,200	$[illegible],140,000

In looking over this table it is worthy of remark that Chicago is not found in it. The city of Chicago has vast commercial interests second to no other city located on the lakes, and its merchants and business men are heavily interested in shipping, owning an important part of the new vessels being built elsewhere; but it has no shipyard. In this respect Cleveland, Detroit and Buffalo, to say nothing of still smaller cities, cast it completely in the shade. This is all the more remarkable, as Chicago business men are alert and progressive, having distinguished themselves in every branch of the iron and steel trades into which they have embarked. If a modern iron and steel shipyard can be sustained at Buffalo, there would certainly seem to be hope for one to succeed at Chicago.

These figures show the magnitude of the trade of our lake system, which is a very important factor in inland transportation, and may be very much more important in the near future if the inter-state commerce act operates in a way to hamper the railroads which extend over the territory contiguous to the Great Lakes. If this proves to be the case, the activity in lake navigation interests may be assumed to have just begun, and to have a very fair prospect of continuing to attract capital and business energy for several seasons, with resulting benefit to the domestic industries which are directly affected by the improvement in this branch of our trade.

Tests of Manganese Steel.

A summary of the results of Prof. W. F. Barrett's investigations of the physical properties of manganese steel, sometimes called retort steel, is given in *Engineering*, from which the following is taken: "This steel, which contains from 12 to 14 per cent. of manganese, is peculiar in that, like copper, sudden cooling softens it, while slow cooling hardens it. No. 19 wire (S. W. G. gauge) was found to have an electrical resistance of about 1 ohm. per metre, and is recommended by Prof. Barrett for electric light resistance coils. The tensile strength of the hard wire was found to reach 110 tons per square inch, while the soft wire could stand but a strain of 48 tons per square inch. The modulus of elasticity was lower than that of wrought iron, the mean for the hard wire being, in round numbers, about 24,000,000 pounds per square inch, and that for the soft wire was still lower. The moduli of ordinary steel and iron wire are 26,753,000 and 26,469,000, respectively." In a later issue of the same journal the following record of tests made in this connection on three pieces of manganese steel, $1\frac{1}{8}$ in., $1\frac{1}{2}$ in., and $1\frac{3}{4}$ in. diameter:

Elastic Limit. Tons per sq. in.	Breaking Strength. Tons per sq. in.	Percentage of Elongation in 10 in.	Percentage of reduction area.
19·40	28·35	25 7	55·0
17·22	28.80	27·8	54·5
19·60	27·99	23·7	57·1

The above tests were made by Prof. Kennedy, of Union College.

The iron and steel workers are divided on the advisability of demanding a sharp advance in the wages schedule.

Four thousand tons of old horse-shoes are to be exported to China, where they will be melted up into sabre blades and knives.

A coal elevator which will discharge 100 tons of coal per hour from barges and schooners will be a mechanical novelty at Fall River, Mass., after April 10.

The sale of Mitchell Iron Mine took place at Negaunee, Mich., March 25. It was one of the largest transactions in transfer of iron properties that has taken place in that section. The purchasers are the Lackawanna Iron and Coal Company. Terms private.

The Phœnix Bridge Company, of Phœnixville, Pa., have made a contract for a steel bridge to be built across the Ohio river, between Cincinnati and Covington. It will weigh about 1,500,000 pounds, and will have spans 500 feet long, "the longest in the world." The contract price is about $1,000,000, and the work will be commenced immediately.

The Decatur Iron Bridge Construction Co., capital stock $100,000, has been chartered at Decatur, Ala., to build the bridge works reported recently, with Geo. S. Moor, of Birmingham as president; R. W. Curtis, Chicago, vice-president and general manager, and E. D. Ormstead, Birmingham, secretary and treasurer. Work has been commenced. Their main building will be 240 x300 feet.

Geo. C. Keene & Co., Cincinnati, manufacturers of cornice brakes, etc., write us: "We have an order for a full set of machines for the Birmingham (Ala.,) Roofing Co., that will keep us busy until May 1. We shipped Brakes last week as follows: One 6-foot to Memphis Tenn., and two 8-foot to Boston, Mass. We have orders for our large size general stove and range makers, brake from W. G. Fisher, of this city, and F. & H. Born, of Cleveland, Ohio."

New and Complete System for the Handling of Heavy Materials.

THE BROWN PATENT HOISTING AND CONVEYING APPARATUS.

THE ONLY POSITIVE ACTING AND SUCCESSFUL

AUTOMATIC HOISTING AND CONVEYING MACHINE

that will take material either from or to any desired point on the line of its tram way and automatically lower or dump the same at will of the operator. Especially adapted for **Mining and Heavy Stripping,** Loading and Unloading of Vessels, Cars, etc.

The Brown Patent Cable Tramway System applied to Stripping and Mining at the "Aurora Mine," Gogebic Range, Wis.

The Brown Hoisting and Conveying Machine Co., Cleveland, Ohio.

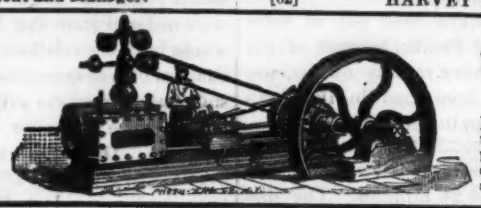
FAYETTE BROWN, President. ALEX. E. BROWN, Vice-President and Manager. [62] HARVEY H. BROWN, Secretary and Treasurer.

The Celebrated Improved

Blandy Patent PORTABLE ENGINE AND SAW MILLS.

10 to 40 Horse Power. Unequalled for accuracy, speed, durability, simplicity and ease of management. Over 7,000 in successful operation.

Address F. J. L. Blandy, Zanesville. O.



The Improved Blandy

Slide Valve STATIONARY ENGINES AND BOILERS.

From 10 to 500 horse power. Built upon the most approved modern mechanical principles. Beautifully proportioned, powerful, durable, compact and easy of management.

Buchanan Manufacturing Co.,

Manufacturers of

SASH WEIGHTS

Cast Washers. Farm Bells, And General Castings.

Telephone 2151.

176 Central Way, CLEVELAND, OHIO.

Beaver Falls Steel Works.

BEAVER FALLS, PA.

Manufacturers of all kinds of STEEL. Special "Beaver" Tool, Die, and Axe Steel. Iron Center, Soft Steel Center, and Cast Plow Steels. Open Hearth Bessemer Agricultural Steel Shapes.

Finished Rolling Coulters and Patent Cutlery Steel.

NICKEL PLATING

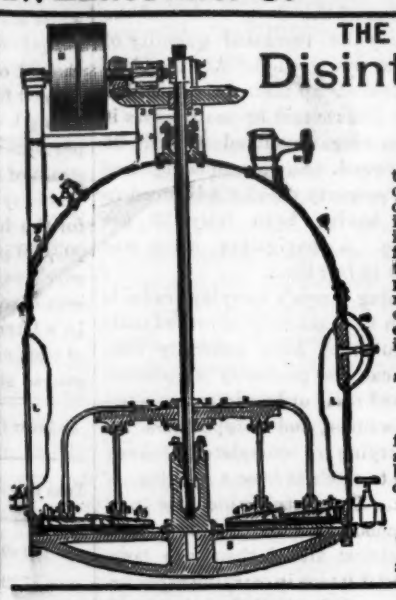
IN LARGE QUANTITIES SOLICITED.

Fair Prices and Best Work.

PROMPTNESS OUR MOTTO.

CITY PLATING WORKS,

106 Canal Street, CLEVELAND, O

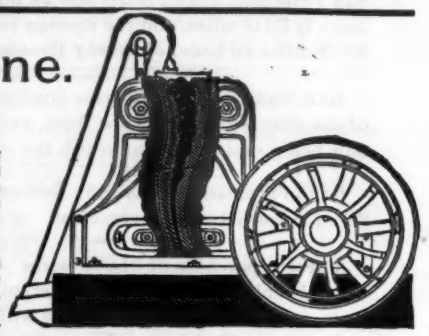


THE MEECH GOLD AND SILVER ORE

Disintegrating Machine.

The Only Method for Preparing the Ore for Amalgamation.

Disintegrating, Decomposing and Desulphurising the ore under a HIGH TEMPERATURE and PRESSURE OF STEAM HEAT, with chemical action and attrition, dissolves and breaks up the chemical combination in the ores, individualizing, cleansing and separating the atoms of metal from the gangue, perfectly freeing them for amalgamation combination with the MEECH AMALGAMATION MACHINE and process, (being the greatest combination of Amalgamation known), will successfully extract 90 per cent. of the metal from rebellious ores, such as Sulphurets, Sulphates, Sulphides, Chlorides, Bromides, Oxides, Tellurides, &c.



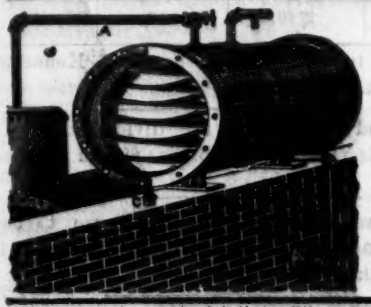
☞ We desire business correspondence in every mining district in the United States.

The Meech Crusher and Pulverizer.

This Machine will **CRUSH AND PULVERIZE GOLD AND SILVER ORES** to 20, 40 and 60 mesh fine, and from 20, 40 and 60 tons per day. The PRINCIPLES of this machine, making it superior to all others, are the peculiar concave and convex shape of the jaws, with concave and convex projections, which breaks, crumbles, stamps and pulverizes the ore with less power, wear and tear, than any other machine. Manufactured by

MEECH & CO., Cleveland, O.

We will contract to erect the **Meech Plant of Mining machinery** for successfully treating all grades of gold and silver ore. 02



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LIVE STEAM

Feed Water Heater

AND

Lime Extractor.

CLEAN BOILER GUARANTEED, AND TIME GIVEN FOR TRIAL.

Durable in Construction. Efficient in Operation. Easily Cleaned.

Send for Descriptive Circular A.

Hoppes Manufacturing Co.

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WORSWICK MFG. CO.

MANUFACTURERS OF MALLEABLE AND CAST IRON FITTINGS,

AND BRASS GOODS. Jobbers of Plumbers', Gas and Steam Fitters' Tools and Supplies.

Sole manufacturers of **The Worswick Patent Radiators.**

AGENTS FOR IRON PIPE AND BOILER TUBES.

Corner Water and St. Clair Streets, 42 CLEVELAND, O.

A. TEACHOUT & CO.

JOBBERS OF

Doors, Glazed Windows, Glass, Blinds, Mouldings, &c.

42, 44 and 46 Michigan St., Cleveland, O. 27 and 29 West Spring St., Columbus, O.

The Eureka Planer and Matcher.

Will do good work and as much of it as any machine in the market costing twice as much. Will plane 24 inches wide, and match from 2 inches to 12 inches, either double or single surfacer.

Each machine is furnished with a pair of Matcher-heads, a pair of Beading-heads, for beading and center-beading; a pair of Novelt Sliding Knives and a pair of Joint ing heads, which makes it the best machine for the money.

SNIGGS & CO., - - - - Buffalo, N. Y.

Send for Catalogue and Price List. 61

O'DONNELL & BARRETT,

BUILDERS OF

Hydraulic and Steam Passenger and Freight

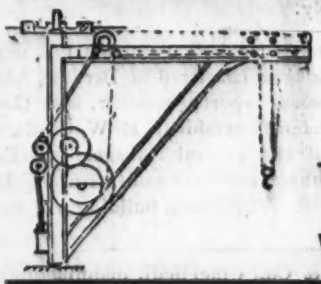
ELEVATORS.

Also Hand Elevators and Dumb Waiters.

No. 53 Center Street,

Telephone No. 2111. CLEVELAND O.

All Kinds of Elevators Repaired.



PHOENIX IRON WORKS.

W. H. Thompson, Proprietor,

builder of

Steam Power Cranes

FOR ALL PURPOSES. ALSO

Turned Shafting, Couplings, Hangers, etc.

Gear Cutting.

Wason Street bet. St. Clair and Superior.

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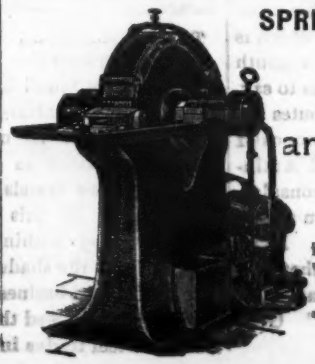

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SPRINGFIELD, MASS.

Patentees and Manufacturers of

EMERY WHEELS and Emery Wheel Machinery.

EMERY WHEEL TOOL GRINDER,

Patented Sep. 25, 1883, and Oct. 12, 1886.

It grinds much faster than a grindstone, and will soon save its cost. Wheels are made to run in water. Will ship on their merits for 30 days' trial, and if not satisfactory, can be held subject to our order.

We make **55** Sizes and Styles of Emery Wheel Grinders so we can furnish them adapted for almost any class of work.

One Thousand of our Grinders now in use.

94-1y Send for Circular No. E.

Industrial Notes

Iron and Steel Works:—

The Bessemer Steel Works, (Cleveland Rolling Mill Company), started up full force at the commencement of the week, three turns of eight hours each.—[South Cleveland Advocate.

The Bellefonte Furnace Company, of Philadelphia, capital, $125,000, has been incorporated. The directors of the latter are John Reilly and James P. Scott, of Philadelphia; Phillip and Thomas Collins, of Ebensburg, and J. King McLanahan, of Hollidaysburg.

The Otis Steel Company, of Cleveland, cast an anvil block last week weighing 68,200 pounds, said to be the largest steel casting ever made in this country. The steel was melted in two furnaces, and the total weight charged was 78,528 pounds. The block took four. minutes and 20 seconds to pour from the time the metal commenced to run from the first furnace until the mould was filled.

A good week's work is reported from the South Chicago plant of the North Chichago Rolling Mill Company, Chicago, Ill., for the week ending with the 19th inst. The converting department turned out 5,048 gross tons of Bessemer steel ingots, the rail mill rolled 4,467 gross tons of steel rails, and Furnace No. 5 made 1,413 gross tons of pig-iron, exclusively from ore, on a fuel consumption of 1,794 pounds of coke per ton of iron, which is the lowest economy in fuel yet attained.

Machine Shops:—

The New Home Sewing Machine Company have purchased a site at Council Bluffs, Ia.

The Bickford Drill Company has purchased all the patents, patterns, shop and good will of H. Bickford, Cincinnati, O., and will take possession April 1st.

Two 3,000 horse power engines, each weighing 120 tons will be built at Spence's agricultural works for Lewis Jones big mill to be erected at Bessemer, Alabama.—[Martin's Ferry (O). News.

L. D. Davis, of the Humboldt Iron Works, Erie, Pa., is placing a vertical engine, said to be capable of developing and keeping up a very high speed which is specially adapted to run all electric light plants.

The stockholders of the Catasauqua Mfg. Company meet at their office in this place on Wednesday next to act on the proposed increase of stock to $500,000. A full vote is expected, as the building of the new plate mill is an important inducement for the stockholders to be present and forward the new branch.—[Catasauqua (Pa.) Dispatch, March 19.

Foundries:—

W. S. Bouton, Chicago, Ill., will erect a foundry on Wood street, to cost $10,000.

The Athens Foundry and Machine shops, Athens, Tenn., and J. F. Brewster, Chester, Pa., will enlarge their foundries.

A new foundry is to be started in Stamford, Conn., John Davenport and others are interested. Two acres of land have been bought for a site, and the first building will be 175 feet long. The work will be general jobbing.

To-morrow morning the Warder, Bushnell & Glessner Co. will make the first heat in the new malleable shop, which is about completed. Only grey iron will be made for the present. No malleable will be made before the first of April, as the owners will not be ready.—[Champion City Times, Springfield, O.

The Black Diamond Manufacturing Co., Zanesville, O., a new and vigorous concern, is engaged in making all kinds of grey iron castings from one ounce up to 2,000 pounds; also all kinds of brass castings, and nickel, silver and gold plating. Mr. B. A. Blandy, the superintendent, was the superintendent of the old firm of H. & F. Blandy, which made a world-wide reputation for the Blandy portable saw mill.

Hardware:—

The Steubenville (O.) Board of Improvement is considering a proposition of a party for starting a nail mill there.

The Elyria, Ohio, Shear Company are experiencing an increased demand for their goods; the daily output now being 85 dozen.

The Sequatchie Hoe & Tool Company, to be located at South Pittsburgh, Tenn., was organized March 15. J. R. Norton was chosen President; J. P. W. Brown, Vice President, and Louis R. Eastmas, Secretary and Treasurer. The company was organized for the purpose of manufacturing solid eye and handled planters' hoes, picks, mattocks, and general mining and railway supplies. The capacity of the works is estimated at 40,000 to 50,000 dozen finished tools per annum, and the number of employees between 65 and 75. The factory was the Ironton, Ohio, Hoe & Tool Company, and was moved to South Pittsburgh.

The traps and pipes in the lavatory of the new Weddell House will be of the Bowes Patent Combination style of polished brass. They will be exposed to view under the different basins.

Wernet & Mertis, Canton, Ohio, manufacturers of the Canton Star Copper Swiss Cheese Kettle, report very considerable sales, especially in Wisconsin and Western cities.

The Stark Nut Lock Company, of East St. Louis, has been incorporated; capital stock, $500,000; incorporators, Henry C. Haarstick George Minch, Frank G. Stark, and William T. Haarstick.

Fifteen new machines have been put in the new Wire Nail Works, this city. About 250 kegs are being manufactured daily. When the new machines are put in operation the output will be about 400 kegs daily. There are plenty of orders ahead.—[New Castle, (Pa)., Guardian.

Articles of association have been filed at the Wisconsin Secretary of State's office by the Reliance Wire Company, of Milwaukee, with $20,000 capital stock. Its purpose is to manufacture and deal in wire of all kinds and wire goods. The incorporators are Frank A. Hall, W. N. Fitzgerald and Oscar F. Lindman.

Out of nearly 400 nail machines in this city only about 200 are in operation. This fact is accounted for by the custom among dealers of buying nails in return for other goods from firms which have company stores. Thus the greater part of the nails bought in this city come from Sharon and New Castle, Jones & Laughlins' being the only firm of nail manufacturers in Pittsburg which has a company store. Another explanation is that it pays manufacturers better to sell muck iron than to put it into a finished condition.—[Pittsburg Times.

Fires in Iron Works:—

Moore's foundry-facing works, Providence, R. I., consisting of a two-story building 100x90 feet, and five sheds, all of wood, were burned March 24. Loss $10,000; partly insured.

The Sanderson Steel Works, in Geddes, a suburb of Syracuse, N. Y., were destroyed by fire March 28. The works were owned by Englishmen entirely, being a branch of the Sanderson Works, of Sheffield. The total loss is $220,000.

Miscellaneous:—

The Van Dorn Iron Works, Cleveland, equipped 31 jails in 1886.

Wm. Fitzsimmons will start hot-polished shafting works in Cleveland.

The Sharon (Pa.) Boiler Works will in a few weeks commence the erection of an iron water tower at Salisburg, North Carolina. The dimensions are, height 100 feet, diameter 20 feet.

The Roller Chain Belting Company, of Columbus, O., report that their sales are on the increase, having at the present time plenty to do, and with their facilities for manufacturing, are able to ship promptly.

One of the new colossal Brush machines now building for the Cowles Electric Smelting and Aluminum Company, at the Brush Electric Company's works in Cleveland, is nearing completion. It will shortly be tested with a load equivalent to 5,000 incandescent lamps.

The Brightman Stoker Company, Cleveland, are placing six stokers in the Union Steel Screw Works, and two for the Brown Hoisting and Conveying Company, both of this city, besides work at Hamilton, O., Carrolton, O., and Detroit, Mich.

A new Cleveland manufacturing enterprise is that of the Forest City Tin Japan Company, 33 St. Clair street. They intend making various kinds of lithographed and decorated tin ware, and expect to be in full running order beginning of April.

The Lindemuth patent heater systems will be consolidated into the Star Steam Heater Company, of Mount Joy, Pa. who will be the manufacturers of all the Lindemuth patents on steam heating appliances, with H. H. Lindemuth general business manager.

Mr. Hedgewish, of the U. S. Car Company, accompanied by Mr. Burtlee, his assistant, have been in the city several days. This company is the largest manufacturer of cars the country and it is extremely probable that an immense factory will be erected by that company here.—[Armiston, (Ala)., Hot Blast.

Youngstown, (O.) *Evening Telegram:* The machinery of the Youngstown Stamping Company is being moved here from Pittsburg, and will be placed in the large brick machine shop formerly occupied by the Forsyth Scale Company, which is being refitted to suit the necessities of the new industry. The company will manufacture all kinds of stamped and pieced tinware, having the most complete machinery West of the Allegheny mountains for this purpose.

The Cleveland Shipbuilding Company have just completed their purchase of their plant for iron shipbuilding, which is of the best approved pattern. The tools for their boiler shop have also been secured, being of the largest class and include the Tweddle plant for riveting and flanging. The contract has been closed for the construction of their new foundry on the corner of Center and Washington streets. It will be 160 feet long by 70 weet wide, and will be completed in about 90 days, when the company will be ready for business in every department.—[Marine Record.

The Structure of Cast Steel.

Some important researches into the inner structure of cast steel were recently made by Messrs. Osmond & Werth, at the Creusot Iron Works, France. From the steel, a plate was rolled as thin as possible and then put on a pane of glass. Next it was treated with nitric acid, whereby the iron was dissolved, leaving the carbon in the condition it occupied in the iron. When this skeleton was examined with the microscope, it was discovered that the carbon is not at all distributed evenly throughout the mass, but that the steel consists in its inner structure of tiny particles of soft iron enclosed in cells formed by the carbon. These cells are again distributed in the iron either combined or as a collection of cells having considerable open spaces between them, so that such a plate or sheet of steel may be rolled until it become transparent. These spaces are irregular in shape, and may in the raw material be almost noticeable, but they are reduced in proportion to the treatment to which the steel is subjected either by rolling or hammering, as naturally the homogeneity is increased.

Praiseworthy Precaution.

Chairman (of the Board)—The master mechanic reports the Deep River bridge unsafe.

Directors (without a dissenting voice)—Give it a new coat of paint.—[New York Sun.

THE Sewing Machine canvasser is numerous, frequent, and ubiquitous. He invades the sanctity of your dwelling with the freedom of an old friend, and with the air of one who has come to stay. Sometimes he proves "a blessing in disguise" as the sequel to my story will show. My aunt has long had a strong and outspoken aversion to these modest missionaries who retaliate by sending every new and verdant canvasser to her house. Last week the familiar Sewing Machine wagon halted at her door, not seeking a customer however, for the gentlemanly agent only begged to leave his machine until his broken wagon could be repaired. Womanly curiosity prompted her to examine the machine in his absence, and the merits of the "New High Arm Davis" did the rest. She was pleased, and, on the agent's return, begged him to exhibit the machine. "Would he sell it?" "No, it was already sold and would have been delivered but for the broken wagon (?). He could, however, if she wished, bring her another just like it." "No, indeed! She must have this identical machine," and so the poor fellow was obliged to leave the machine and receive the money for it. He won his wager of $10, but my aunt is thoroughly pleased with her matchless "Davis Machine," and so happy in its possession that she freely forgives the deception.—[Adv.

LIST OF PATENTS.

Relating to Iron, Steel, Metal, Machinery, Hardware and Mining Interests.

Reported expressly for this paper by Chas. J. Gooch, Solicitor of Patents, Washington, D. C.

BEARING DATE MARCH 22, 1887.

Metallic shingle. H W. Harry, Fort Worth Tex.
Method of concentrating gold, J. W. Parmelee, Englewood, Ill.
Ore concentrator. F. A. Herring, Reno Nev.
Metallic lathing, G Kelly, Chicago Ill.
Rock-drill carriage. J. C. Githens, North Tarrytown, N. Y.
Stamp mill ore screen T H Frauenricht, Lead City, Dak.
Drill jar R. C. Elliot, Pittsburgh, Pa
Attachment for smelting furnaces, E. R. Moffet, Jr., and O. R. Moffet, Joplin, Mo.
Hoisting machine. D. S. Waugh, Denver, Colo.
Snap hook. N. Kinsley, and A. Heusser Taylor, Nev.
Shovel, P. W. Groom, St. Louis Mo Re-issue.
Screw-driver, Geo. W. Hael, Minneapolis, Minn.

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CLEVELAND, O. 82

Tuttle, Oglebay & Co.,

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COR. FOURTH AND RACE STREETS,

Cincinnati, Ohio.

Chicago Office—No. 107 Dearborn Street, Room 11.

GEORGE K. HOSFORD, Manager. 30

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AND METALS.

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Detroit Iron Furnace Co.
Deer Lake Furnace Co.
Iron River Furnace Co.
Fond du Lac Furnace Co.

Sole Sales Agents in West and Northwest for Brier Hill Iron and Coal Co.'s brands.

Tod—Brier Hill Scotch, Iron River, Grace, Bessemer.

Also a full line of Southern Foundry and Forge Irons.

Tod, Stambaugh & Co.,

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IRON ORE AND PIG IRON.

MERCANTILE BANK BUILDING,

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101 ST. CLAIR STREET, Cleveland, O.
62

POTTER, BIRDSALL & CO.

Lumber.

YARD & PLANING MILL,

Nos. 7 & 10 Carter Street,

CLEVELAND, O. 42

CLEVELAND BUSINESS DIRECTORY.

Bolt and Nut Works.

THE HOTCHKISS & UPSON CO. Manuf'rs. Machine, Plow & Elevator Bolts, Coach Screws. 15

Boiler Makers.

SMITH & TEACHOUT—(Established 1857.) Boilers, Tanks, Stills, etc. 644 Broadway.

Bridge and Boiler Builders.

BUCKEYE BRIDGE AND BOILER WORKS, mfrs. of Arch and Truss Bridges, Boiler Tanks and Oil Stills. Bet. Wasson St., and Case Ave.

Belting, &c.

PARKIN & BOSWORTH. Agents for Shultz Raw Hide Belting, 9 & 11 South Water street.

Carriage Bolts.

THE COLWELL & COLLINS NORWAY BOLT CO., manufacturers of Philadelphia Carriage and Tire Bolts. 41

Coal, Iron and Ore.

ANDREWS, HITCHCOCK & CO., Briar Hill Coal and Pig Iron. 101 St. Clair St. 81

BABCOCK, MORRIS & CO., —COAL.— Grand Arcade Building. Cleveland, O. 5

PICKANDS, MATHER & CO., Iron Ore and Pig Iron, 101 St. Clair St. 61

SANGER, A. L., wholesale Scrap Iron, Nos. 173, 175 & 177 Merwin Street. 33

File Works.

INDUSTRY FILE WORKS, manf'rs of Files and Rasps. Old files re-cut. All kinds of Job Grinding. 38 Columbus street. 13

Foundries

BOWLER & CO., Car wheels, Patent Chilled Frogs, and all kinds of castings. 9 Winter.

LAKE SHORE FOUNDRY, Water and Gas Pipe, Light and Heavy Castings. Alabama St. 61

TAYLOR & BOGGIS FOUNDRY CO. Fine Gray Iron Castings. 65 to 73 Central Way.

FITZSIMONS WM. & SON, Rolling Mill and Machinery castings. Rolls a specialty. No. 435 Broadway. 64

Foundry Facings.

CLEVELAND FACING MILLS, Foundry Supplies, Cor. Scranton & Carter Sts. 21

Hardware and Iron.

BINGHAM, WM. & CO., Hardware, Iron, Nails and Metals, 148 and 150 Water St.

CLEVELAND ROLLING MILL CO., manufacturers of Steel and Iron Wire and Steel Tire. 34

THE EBERHARD MF'G CO. manfrs of Carriage, Wagon and Saddlery Hardware. 25

Hardwood Lumber.

MARTIN & BARRIS, dealers in all kinds of Hardwood Lumber. 130 Central Way. 51

Lumber.

WOODS, JENKS & CO., manufacturers and dealers in Lumber, Lath, etc., 5 Carter street. 4

FISHER, WILSON & CO., Wholesale lumber dealers (pine & hardwood), rough and dressed lumber, timber, lath, shingles, etc. 47 Central Way. 82

POTTER, BIRDSALL & CO., dealers in rough and dressed lumber, lath and shingles. Yard and planing mill, 7 & 10 Carter St. 42

Machine Shops.

FORD, GEO. A., Metal Pattern Maker, small machinery repaired 15½ Frankfort St.

Steel Stamps and Stencils.

FLEHARTY, J. H. & Co., Rubber Stamps, Seals, Stencils. 92 Seneca street. 54

BUSINESS DIRECTORY.

Akron, O.

MCNEIL, J. C. CO., Steam Boilers, Heavy Sheet Iron Work, &c. Repairing promptly executed.

TAPLIN, RICE & CO., manuf'rs. of Stoves and Hollow Ware, dealers in Tinners' Stock, etc. 04

WEBSTER, CAMP & LANE MACHINE CO., Founders and Machinists, 12 Main street. 84

Alliance, O.

CHAPMAN, G. L., builder of Engines and Machines. Also Jobbing and Repairing.

Columbus, O.

REYNOLDS BROS., Manufact'rs of hand-cut Files and Rasps. Old files re-cut. Send for Price List. 11

CITY BOILER WORKS, manf's of Stationary, Portable, and Locomotive Steam Boilers. All work warranted. Borger Bros. & Co. 12

Cincinnati, O.

THE CINCINNATI STEAM HEATING CO. manfrs, dealers and contractors. Warming and ventilation of public and private buildings a specialty. Boilers, Radiators, Pipe, Fittings, Brass Goods, &c. Correspondence soliced. 187 West Pearl street. 92

CUNNY, ALEX. D., Queen City Pattern Works. Patterns made to order. 134 E. 2d st

HATFIELD JAMES Pattern Maker. Patterns of every style made to order. 165-167 West Second Street. 65

BUSINESS DIRECTORY.

Canton, O.

NOVELTY IRON WORKS, Mill Work, Shafting, Engines, Imperial job printing press etc. 73

Hinckley, O.

ISHAM, W. S. Tin cans of every description. Large job lots special prices. Correspondence solicited. 81

Meadville, Pa.

CURRY & CO. general jobbers in Castings of all kinds. 43

Mansfield, O.

MANSFIELD STEAM BOILER WORKS, Man'frs of Steam Boilers, Oil and Water Tanks, and all kinds of Sheet Iron Work. 03

Niles, O.

REEVES BROS., Manufacturers of Boiler, Tank and Sheet Iron Work, etc. 64

Rochester, N. Y.

WOOD-WORKING MACHINERY. Send for Catalogue. J. S. Graham & Co. 43

GLEASON, WILLIAM, manufr. of Machinists' Tools, Lathes, Planers, and Pat. Gear Dressing Machines. 10 Brown's Rac.

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Practical Iron Moulder and Foundry Foreman. Fully Illustrated.

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(LITHOGRAPH BUILDING.)

THE

SETH THOMAS

WATCH

Best Watch in America for the Price.

MARKET REVIEW.

OFFICE OF IRON TRADE REVIEW.
CLEVELAND, O., FRIDAY EVENING, April 1, 1887.

Iron Ore.

With the yet unsettled and vexed question of freight rates in a chaotic condition, the state of the iron ore market remains undisturbed, but a close observer will find dealers firm in their ideas of prices, and no evidence of any weakness yet shows itself, nor does it seem to be expected that such will occur. No one seems to anticipate any decline as a result of the effect of the Inter-State Commerce Bill on freight rates but the contrary appears to be the prevailing impression if the market is affected at all by this much criticised piece of legislation. The feeling of indecision has prompted some to buy in 100 or 200-ton lots where their immediate wants have prompted them, and a slight improvement in shipments to furnaces, particularly over the N. Y., P. & O., R. R. is noted, as we anticipated in our last report. Buyers stick to the idea that the market is in their favor, and sellers feel much the same way, and, as they are unable to come together, we have no round sales to record. Strictly pure Bessemer for steel purposes is the strongest ore in the market. Lake freights are at our last quotations, and will probably remain at those figures for the present, as the bulk of good vessels have been chartered, and there is not remaining tonnage enough to materially change those figures. The estimates of leading ore men here as to the probable output of the Gogebic range make the figures from 1,250,000 to 1,500,000 tons. We quote:

No. 1 Specular and magnetic Bessemer ores per ton	$7 00@7 50
No. 1 Specular (non-Bessemer) ores per ton	6 00@6 50
Bessemer Hematites	5 75@6 00
Non-Bessemer Hematites	5 00@5 75

Pig Iron.

Everything along the line of the pig iron market is quiet, and there is not a particle of change in values, nor do dealers expect any remarkable variation from the present status in the immediate future. It is not generally anticipated that there will be a marked improvement in large lot sales in April, but that the aggregate will show quite an increase in volume. Purchasers will probably pursue the hand-to-mouth policy and with this state of the market comes the feeling that prices will remain without much change. Business men here interpret the effect of the inter-state commerce act to mean a slight advance on short hauls while the long haul rate will remain about as it is. This, however, is only an opinion in advance without any official figures to back it, and we give it for what it is worth. Unofficially it is said that the Mahoning and Shenango valley rates will be advanced some 30 cents, but it is thought that even should these rates prevail, there need be no apprehension of any serious effect arising from foreign competition. When buyers and sellers know how they stand relatively—which will not be until the freight rate problem has reached a solution—there will probably be larger transactions to record, and a better feeling all around, as it is a matter of record that sales during the latter part of February, and all of March, have been limited. Our last quotations still hold, with strictly pure red short, at furnace, $20.50, and neutral iron $19.50, Hubbard Scotch No. 1, $23, and No. 2, $22, four months, Cleveland. Charcoal iron is in moderate demand at $25@25.50, cash. We quote f. o. b. cars, four months, Cleveland:

CHARCOAL PIG IRON.

Nos. 1 and 2 Lake Superior charcoal	$25 00@26 00
Nos. 3 and 4 Lake Superior	25 00@26 00
Nos. 5 and 6 Lake Superior	25 00@26 00

BITUMINOUS AND COKE IRON.

No. 1 Bessemer	$22 50@23 40
No. 1 foundry, all lake ores	22 00@22 90
No. 2 same	21 40@21 90
No. 1 foundry, lake ores, with cinder mixture	21 90@22 40
No. 2 same	21 90@21 40
No. 1 silvery, native Ohio ores	20 00@21 00
No. 2 same	19 00@20 00
No. 1 gray forge, red short	21 40@21 90
No. 1 gray forge, neutral	20 40@20 90
No. 1 American Scotch (Black Band)	22 40@22 90
No. 2 American Scotch "	21 40@21 90

Manufactured Iron.

The market for manufactured iron moves along in the same rut as last reported, and if there is any change either way it shows a trifle more activity, the matter of unsettled freight rates affecting it unfavorably and tending to keep buyers out of the market. We have no change in prices to record, and our last figures still hold good, while, generally speaking, there is a good feeling, and quoted rates seem to be maintained, and the business of the incoming month is looked forward to with favorable expectations. The Bessemer companies' board of control report contracts on their books for steel rails amounting to 1,450,000 tons, which, it is stated, is within 20 per cent. of their entire capacity. The Bessemer mills can, if put to it, as the likely will be, turn out 2,000,000 tons of rails. Bar iron is quiet at $2.20.

Scrap Iron.

The scrap iron market shows no features of improvement as regards prices, but more sales are reported than at our last report, and some inquiries for small lots are reported; otherwise there is no feature of interest, and our quotations remain nominally, old rails, $26@27, old car wheels, $20.00 and No. 1 wrought $23.00. Our Louisville report indicates a good demand for old car wheels and in consequence of their scarcity, sellers anticipate a free purchase of the high grades of wheel irons.

Hardware.

The hardware market is quiet and merchants seem to to be satisfied that it is so, and expect no other state of things until after a solution of the freight rate matter and better weather prevails.

We note an advance in prices of dripping pans and a slight decline in sieves and hinges.

Coke.

We have no change to report in the condition of the coke market. Matters appear to be settling down to a good business ahead, and when the excellent condition of the iron industry is considered, we think dealers should be well satisfied with the outlook. The ovens in the Connellsville and West Virginia regions are growing more numerous, and the production will be largely enhanced in both sections.

CINCINNATI PIG IRON MARKET.

Reported for the IRON TRADE REVIEW by Rogers, Brown & Co.

A carload business, with a sprinkling of 100 and 200 ton orders, has been the record of the week at Cincinnati. Dealers have not pushed sales, and by general consent transactions seem to have been dropped until freight rates can again be made. This situation naturally gives the appearence of weakness to the market and leads some buyers to think that a decline in prices has set in. By the large manufacturers and sellers of iron, a little decline in prices would be received with satisfaction, as putting a decisive check upon importations, and upon the unwonted activity in new furnace enterprises. It is believed that a satisfactory range of prices can be maintained for a long time with the present vast consumption, if foreign iron can be kept out, and new sources of supply not too greatly increased. All is still doubt and uncertainty as to freight charges after April 4th, and there will be no attempt to transact business on any scale until buyers and seller know where they are. We make no change in quotations. (March 28):

HOT BLAST FOUNDRY IRON.—Ohio and Southern Strong Coke, No. 1, $21 50@$22 00; Ohio and Southern Strong Coke, No. 2, $21 00@$21 50; Ohio and Southern Strong Coke, No. 3, $20 00@$20 50; Ohio Soft Stonecoal, No. 1, $21 00@$21 50; Ohio Soft Stonecoal, No. 2, $20 00@$21 00; Mahoning and Shenango Valley coke, No. 1, $23 00@$24 00. CHARCOAL IRON.—Hanging Rock, No. 1, $24 00@$26 00; Hanging Rock No. 2, $23 00@$24 50; Tennessee and Alabama, No. 1, $22 00@$23 00; Tennessee and Alabama, No. 2, $21 50@$22 00. FORGE—Strong Neutral Coke, $19 50@$20 00; Mottled Coke, $18 50@$19 00; Cold Short, $18 50@$19 00. CAR WHEEL AND MALLEABLE—Southern Car Wheel Iron, $26 00@$28 00; Hanging Rock Cold Blast, No. 1, $27 00@$28 00; Hanging Rock Cold Blast No. 2, $24 00@$25 00; Lake Superior Malleable, $27 00@$28 00

CHICAGO PIG IRON MARKET.

Reported for the IRON TRADE REVIEW by Rogers, Brown & Co., W. W. Backman, Resident Agent.

Quite an active trade in car load orders has been going forward during the week. Some of the smaller country buyers have thought it wise to lay in a moderate supply, in view of probable changes in freights. No larger business, however, has been possible, for the reason that the furnaces would sell only on cars, at their works, while buyers will only buy for delivered prices. The main elements in the situation remain unchanged. There is a very large consumption at all the foundries and mills, and a large production, but no accumulation at the furnaces. Buyers still look upon the market as in their favor, and do not seem to want to anticipate purchases. We quote for cash, f. o. b. Chicago (March 26):

Charcoal Foundry:—Lake Superior, $23 50@24 50; Southern; $23 50@24 50; Hanging Rock, $24 50@26 00. Coke and Bituminous Coal Foundry:—Ohio Hanging Rock softeners, No 1, $23 00@24 00, Ohio Black Band softeners, No. 1, $24 00@24 50; Jackson county, Ohio, softeners No. 1, $23 00@23 50; Ohio Lake Ore and Cinder softeners, No. 1, $22 00@22 50; Southern coke foundry No. 2, $22 50@23 00; Southern coke foundry No. 2¼, $22 00@22 50; Southern coke foundry No. 3, $21 50@22 00. Car Wheel and Malleable.—Lake Superior, $23 50@24 50; Standard Southern, $25 50@28 00; Hanging Rock Cold Blast, $28 00@30 00; Hanging Rock Warm Blast, $25 50@26 50. Old Materials:—Old Iron American Rails, $27 00@28 00; Old wheels, $22 50@23 50.

DETROIT PIG IRON MARKET.

Reported for the IRON TRADE REVIEW by Charles Himrod & Co.

It is deemed certain that large buying must shortly be done by nearly all users of pig iron. It would seem as if a concerted action upon the part of the buyers had been agreed to, to hold off from buying, as transactions during the latter part of February and all of March have been very small. It is noteworthy that the effect upon the market has been slight in the way of reduction. Some weaker holders have shown their hands, to be sure, and accepted less for their iron than during December and January; but as a rule the reductions have only been slight, and the comparatively few orders placed were at full market rates. The large selling ahead placed the manufacturer of pig iron in a comfortable state of mind, and we think even should this holding off from buying exist another 30 days there would be little worry. But stocks in the hands of consumers must be getting small, and it is generally thought that large purchasing will be done in the months of April and May, and that a higher range of values will exist, at least by the 1st of June. The effect of the Inter-State Commerce Bill is an unknown quantity at present. Some hope good from it, while others fear evil; but as it treats all alike, in the same conditions, the policy of what is good for Peter is good for Paul, we think, would not seriously effect any change in the condition of business, once that the action of the bill and its effects are seen. With a dull market we quote as follows (March 30):

Lake Superior Charcoal, all Nos. $24 50@$25 50; Lake Superior Coke, all ore, $23 50@$24 50; Lake Superior Coke, cinder mixed, $22 00@$23 00; Standard Ohio Blackband, $23 50@$24 50; Southern No. 2, $22 25@$22 75; Southern Silvery, open, $22 00@23 00; Jackson County (Ohio) Silvery $22 00@23 00; American old iron rails, $28 00@29 00; Old wheels, $22 00@23 00.

ST. LOUIS PIG IRON MARKET.

Reported for the IRON TRADE REVIEW by Rogers, Brown & Co.

The only business we can chronicle the past week is in the way of small orders which sellers are able to ship before April 4th, deliveries beyond that time being practically cut off by freight uncertainties. Some of the roads have worked out their rates under the new law to a point where they can see about what the changes will be. Unofficially, it is learned that the changes on pig iron will, in most cases, amount to only a moderate advance on current rates. Some cases, however, are mentioned in which the rates will be doubled. There are still very much uncertainty and discussion as to how the new law will work out its operations as affecting the pig iron industry, and the disposition on all hands seems to be to sit down and wait until something more definite can be determined. Furnaces are having more than they can do to keep up with their old orders, and are now pressing their product; but some special lots have naturally shown weakness under the suspension of business. We quote (March 26):

Charcoal Foundry—Missouri, $22 00@22 50; Southern, $22 00@$24 00. Coal and Coke Foundry—Southern, No. 1, Southern, No. 2, (open bright) $21 50@22 00, Ohio Softeners, $22 00@25 00. Mill Iron—Missouri, $21 00@21 50; Southern No. 1, $20 50@21 00; No. 2, $20 00@20 50. Car Wheel & Malleable—Southern, $25 00@28 00; Lake Superior, $25 00@27 00. Scrap, iron, etc.—Old Car Wheels, $21 00@22 00; Old Rails, $27 00@28 00; Connellsville Coke, (Frick's) $6 60.

LOUISVILLE PIG IRON MARKET.

Reported for the IRON TRADE REVIEW by Geo. H. Hull & Co.

Aside from the numerous inquiries for small lots of softeners, the market has been quiet the past week. We anticipate no improvement in the demand until after the effect of the inter-state commerce bill has developed itself. Buyers are determined to hold their orders until then. We report a good demand for old carwheels, and in consequence of their scarcity, we anticipate a free purchase of the high grades of wheel irons. We renew our quotations (March 30):

PIG IRON.—Southern Coke, No. 1, Foundry, $21 50@$22 00; Southern Coke, No. 2, Foundry, $20 50@$21 00; Southern Coke, No. 2¼, Foundry, $20 00@$20 50; Hanging Rock Coke, No. 1, Foundry, $21 00@$21 50; Southern Charcoal, No. 1, Foundry, $22 00@$23 00; Silver Grey, different grades, $20 00@$20 50; Southern Coke, No. 1, Mill Neutral, $19 50@$20 00; Southern Coke, No. 2, Mill, Neutral $19 50@$20 00; Southern Coke, No. 1, Mill, Cold Short, $19 00@$19 50; Southern Charcoal, No. 1, Mill, $20 50@$21 00; White and Mottled, different grades, $17 50@$18 50; Southern Car Wheel, Standard Brands, $26 00@$27 00; Southern Car Wheel, other brands, $24 00@$25 00; Hanging Rock, Cold Blast, $27 00@$28 00; Hanging Rock, Warm Blast, $23 00@$24 00.

PITTSBURGH PIG IRON MARKET.

Reported for the IRON TRADE REVIEW by A. H. Childs.

The present characteristics of the pig iron market are much the same as at date of last report. Transactions are few in number and small in volume, which will be the case until the conflicting views of buyers and sellers are harmonized. Stocks in consumers' hands are sufficiently large to cause no uneasiness as to immediate future requirements, while furnace men generally adhere to the belief that there will be no further decline in values and rather than make concessions to effect sales, prefer to await developments. Quotations are (March 28):

PIG IRON.—No. 1 Foundry, $22.00@$22.50; No. 2 Foundry, $21.00@$21.50; Gray Forge $20.00@20.50; White and Mottled, $18.00@$19.00; Warm Blast Charcoal, $22.00@$25.00; Cold Blast Charcoal, $25.00@30.00; Bessemer, $23.00@23.50, four months.

BUFFALO HAMMER CO.,

Buffalo, N. Y.,

Manufacturers of

Hammers, Hatchets, Sledges,
Railroad, Mason and Blacksmiths' Tools.
All Goods Warranted in Every Respect.
Send For Our New 1887 64-page Catalogue.

20 MENTION THIS PAPER.

THE SHELDON PATENT COMPOUND LEVER CAR MOVER.

Works perfectly on a frosty track.

Harmon, Gibbs & Co., Corry, Pa.

W. R. Evnon & Co.,

Manufacturer of

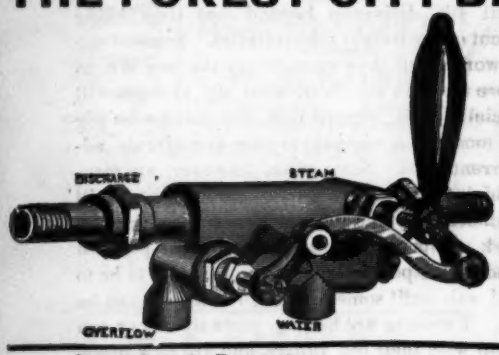
Milling Machines, Die Sinking Machines
Universal Heads,
Index Centres
Vises,
And other
Special Tools.

Corner Leonard and Winter Sts., CLEVELAND, O.

THE FOREST CITY BRASS WORKS,

Exclusive Manufacturers of

The Kennedy Injector.



This Injector is warranted to lift water 25 feet, and will take water at 125 Degrees Fahrenheit. No adjustment is required for varying steam pressure. Started, stopped and regulated by one lever. Also manufacturer of **BUCKEYE FLUE CLEANER,** nothing superior in the market. Send for price list and catalogue. Specialists in all kinds of Brass Castings and Babbit Metal. Estimates furnished on application.

The Forest City Brass Works,
40 to 44 Leonard Street.
72 Cleveland, Ohio.

Cleveland Foundry

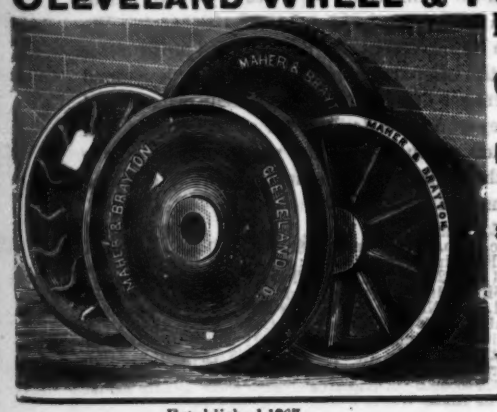
Castings

For Machinery and Rolling Mills

Car Wheels

all sizes and kinds, with and without Axles.
Chilled Faced R. R. Frogs
STREET RAILROAD TURNOUTS.
Nos. 9, 11 & 13 Winter Street. } **Bowler & Co**

CLEVELAND WHEEL & FOUNDRY WORKS.



MAHER & BRAYTON, Proprietors,
Manufacturers of
Car, Engine, Truck and Tender Wheels.
RAILROAD, ROLLING MILL and Machinery Castings.
and Street Railroad Wheels and Turnouts.
ALSO
Chilled-Faced Railroad Frogs.
Office: 20 Carter Street,
Works: Cor. Carter and Collins Streets.
Cleveland, Ohio. 32

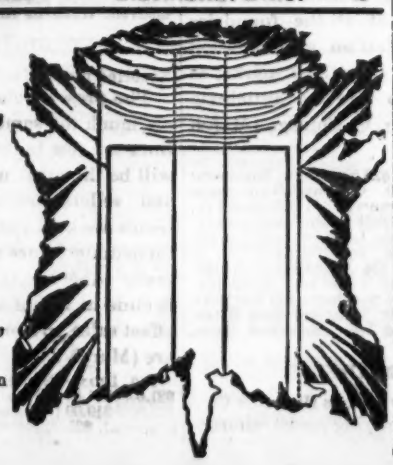
Established 1867.

Rubber and Belting Warehouse
—OF—

W. H. H. Peck & Co.,

176 Superior St., Cleveland, O.
NEW YORK BELTING & PACKING CO.'S
Rubber Belting, Hose, Packing,
STEAM HOSE, EMERY WHEELS, AND
FIRE HOSE.

Hoyt's Celebrated Leather Belting,
GILT EDGE RAW HIDE LACE,
Empire and Soapstone Packing. Rubber Back Piston Packing. Rubber Clothing. Boots and Shoes.
Wholesale and Retail.



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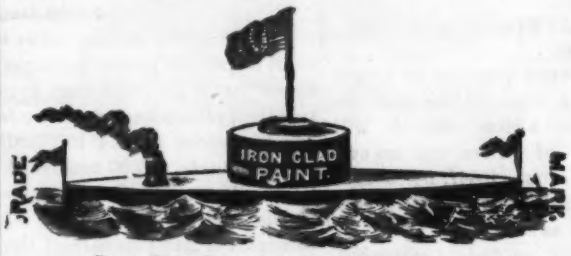
Iron Clad Paint Co.

Order direct from the **Iron Clad Paint Co.,**

actory 75 & 77 Central Way. Sec. & Treas. No. 3 Case Building.
CLEVELAND, OHIO.



Trade Mark Patented—Paint Patented

And get the genuine article, and save liability of suit for using an article made in violation of the patents issued to Wm. Green and now owned by this Company.

IRON CLAD PAINT is the most durable, most fireproof and Cheapest Paint made.

FURNISHED both Dry and Ground in Oil.

Used by Nearly all the Railroads. 63

ALEXANDER NIMICK, President. GLENDY S. GRAHAM, Secretary. ARTHUR BRITTAN, Manag. & Treas.

Nimick & Brittan Mfg. Co.,

PITTSBURGH, PA.,

Manufacturers of

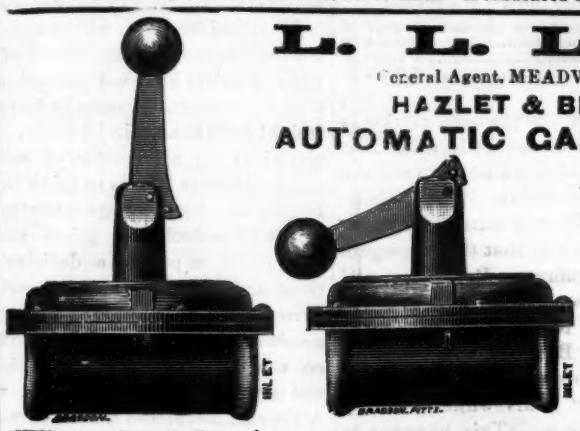
BUILDER'S FINE HARDWARE

Patent Burglar Proof Door Locks,
Knobs, Sash Locks and Padlocks,
Genuine Bronze and Imitation Bronze Goods.

Large Catalogue mailed on receipt of 50 cents. A condensed Catalogue mailed free. 11

L. L. LORD.

General Agent, MEADVILLE, PA., for
HAZLET & BEMAN'S
AUTOMATIC GAS SHUT-OFF.



(Patent pending.)
No Explosions From Natural Gas.
No Valve Wedge or Spring to stick. All valves thoroughly tested and warranted.

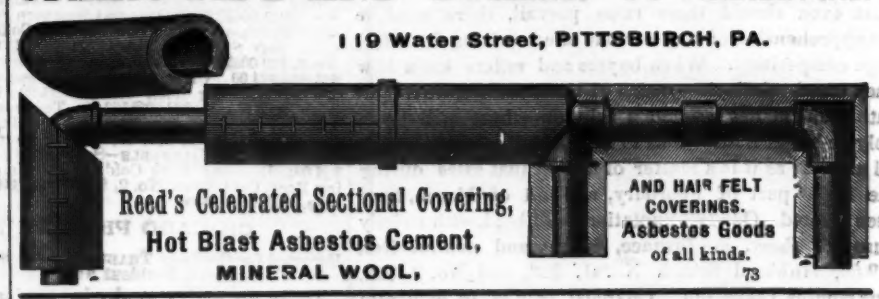
ALSO AGENT FOR
JACKMAN'S
Atmospheric Gas Lamp,
The best burner for natural or artificial gas on the market.

Send for price list and circular to **L. L. LORD,**
60 MEADVILLE, PA.

JOHN A. McCONNELL & CO.,

STEAM PIPE AND BOILER COVERINGS.

119 Water Street, PITTSBURGH, PA.



Reed's Celebrated Sectional Covering,
Hot Blast Asbestos Cement,
MINERAL WOOL,
AND HAIR FELT COVERINGS.
Asbestos Goods of all kinds.
73

HERCULES POWDER

HERCULES,
THE GREAT STUMP AND ROCK
ANNIHILATOR.

SEND FOR DESCRIPTIVE PAMPHLET

Stump before a blast. | Fragments after a blast.

STRONGEST and SAFEST EXPLOSIVE

Known to the Arts.

POWDER, FUSE, CAPS,
Electric Mining Goods,

AND ALL TOOLS FOR STUMP BLASTING,
FOR SALE BY THE
HERCULES POWDER COMPANY,
40 Prospect Street, Cleveland, Ohio.
J. W. WILLARD, Manager.

CLEVELAND WHOLESALE PRICES.

HARDWARE.

Anvils.

per lb.

Eagle, American ..... 10cts dis 20@20&5
Wrights 9½
Armitage mouse hole 9
Armitage mouse hole extra 11½
Wilkinson ..... 9½@10c

Anvil Vise and Drill.

Millers Falls Co. $18 ..... dis 20
Cheney Anvil and Vise ..... dis 25

Apple Parers,

₩ doz

Champion 8 00
Family Bay State 12 00
Gem 5 00
Gold Medal 4 50
Improved Bay State 30 00
Improved Bay State, with push off 33 00
Jersey 5 00
Little Star 4 50
Model 4 00
New Lightning 6 00
Oriole 5 00
Penn 4 50
Standard 4 50
Turntable 5 00
Waverly 4 50
White Mountain 5 00

Augers and Bits.

Snells ..... dis 60&10
Cook's Douglass Mfg. Co ..... dis 55
Russell Jennings' augers and bits, ... dis 25
Expansive Bits, Clark's small. $18; large, $26 ..... dis35@ 35&5
Hollow Augers, Ives' ..... } dis 25&10@
Hollow Augers, French, Swift & Co } 25 & 10& 5
Hollow Augers, Bonney's Adjust. ₩ doz. $48 ..... dis 40&10
Hollow Augers, Stearns' Adjust. ₩ doz., $48 ..... dis 20&10
Gimlet bits ..... per gross $3.00 to $3.25
Williams or Holtz Bit Stock Drills ... dis 50&10&10
Ship Augers ..... dis 15@20

Awl Hafts.

Sewing, brass ferrule, ... ₩ gross $3.50, dis 45&10
patent sewing, short ..... ₩ doz $1.00, dis 40&10
Patent sewing, long ..... $1.20 ₩ doz net
Patent peg, plain top, .. $10.00 ₩ gro., dis 45&10
Pat. peg, leather top, ... $12.00 ₩ gro., dis 45&10

Awls, Brad Sets, &c.

Awls, Sewing, Common ..... ₩ gross $1.70—dis 35
Awls, Shouldered Peg ₩ gross 2.45—dis 40@40&10
Awls, Patent Peg ..... ₩ gross 63c—dis 40@40&10
Awls, Shouldered Brad ..... $2.70 ₩ gross—dis 35
Awls handled brad ..... $7.50 ₩ gro dis 45
Awls handled, scratch ..... $7.50 ₩ gro dis 35&10
Awls, socket scratch ..... $1.50 ₩ doz dis 25@30
Brad Sets, No. 42, $10.50; No. 43, $12.50 ..... dis 70&10&5
Brad Sets, Stanley's Excelsior, No, 1. $7.50 ..... dis 30&10

Axes.

Best grades ..... ₩ doz $7.00 to $7.25
Others ..... ₩ doz $6.50 to $6.75
Special Brands ..... 5.50@6.00

Axle Grease.

Frazier's, in bulk ..... keg ₩ lb 4c; pail 5c net
Frazier's, per gross ..... $$9.50

Axles.

Nos. 1 to 6 ..... 4½ to 7½c
Nos. 7 to 18 ..... dis 60@60&5
Nos. 19 to 22 ..... dis 70@70&5

Bag Holders.

Sprengle's pat., ₩ doz $18 ..... dis 60

Balances.

Spring balances ..... dis 50
Common 24 lb ..... ₩ doz $1.50 dis 50

Bells.

Hand, light Brass ..... dis 75&10@75&10&5
Hand, Extra Heavy ..... dis65& 10 to 70
Hand, White Metal ..... dis70@70&10
Hand, Silver Chime ..... dis 25&10&5
Hand, Globe (Cone's Patent). ..... dis 25&10@35
Gong, Abbe's ..... dis 25&10@ 5
Gong, Yankee ..... dis 40&10
Gong, Barton's ..... dis 40&10@5o
Pull, western ..... dis 25&10
Cow, common wrought ..... 60&10
Cow, western ..... Sargent's List 70&10
Call ..... dis 40@40&5
Farm bells ..... ₩ lb 2½@2¾
Steel alloy, church and school ..... dis 0c

Bellows.

Discount.

Blacksmith's ..... 50&10 &5
Moulders, ... discount 50@5o & 5
Hand, ... discount 50@50 & 5

Belting, Rubber.

Standard ..... dis 70&10@70&10&5
Extra ..... dis60&10@60&10& 5
N. Y. Belting & Packing Co. standard ... dis 70&5
N. Y. Belting & P'king extra standard .. dis 60&5
Cleveland Rubber Co., extra standard ... dis 60&10
Extra 5 dis on all for Cash.
Shultz Raw Hide Leather Belting, single, dis 30
" " " " double, dis 35
Standard, oak tanned, ... dis 50
Lower grades ..... 50&10 to 60

Bench Stops.

Hotchkiss's ₩ doz $5.00 ..... dis 10@10&10
Weston's ₩ doz No. 1, $10.00; No. 2, $9 ..... dis 25&10&5
McGill's ..... ₩ doz $3.00 dis 10
Morrill's ..... ₩ doz $9.00 dis 50

Bit Holders.

Extension, Barber's ..... ₩ doz $15 00, dis 40&5
Diagonal ..... ₩ doz $24.00 dis 40
Angular ..... ₩ doz $24 00, dis 40&5

Blind Adjusters.

Domestic ..... ₩ doz $3.00 dis 33⅓
Excelsior ..... ₩ doz $10.00 dis 50 and 10 and 2

Blind Staples.

Barbed ⅛ inch and larger ..... ₩ lb 8@8½c net
Barbed ⅝ inch ..... ₩ lb 9@9½c net

Bolts.

Cast iron barrel bolts ..... } 70@70&10
Cast Iron shutter bolts, etc ..... } 70@70&10
Cast iron chain bolts ..... } ....65&10
Ives patent door bolts ..... } 55
Wr't iron barrel bolts ..... } 70@70&10
Wrought iron square bolts ..... } 70@70&10
Wrought shutter bolts ..... } 60&10
Sargent's list
Carriage com. new list ..... 75@75&5
Tire, common, new list 70
Carriage tire, Philadelphia pattern 75&10@75 [&10&5
Stove bolts 67½
Plow bolts ..... 60&5
Machine ..... 60&10&10@70
Ends ..... dis 60&10&10to70

Blind Fasteners.

Mackrell's ..... ₩ doz. pairs, $1,00—dis 20@20&10
Van Sand's Screw Pattern $15 ₩ gross—dis 60&10
Van Sand's Old Pattern ..... $15 ₩ gross—dis 55&10
Washburn's Old Pattern ..... $9.00 ₩ gross, net
Merriman's ..... new list, net
Salisbury & Austin No, 2008 ..... $9.00 ₩ gross, net
Security Gravity ..... $9.00 ₩ gross, net

Borax.

₩ lb ..... 8½c@7c

Boring Machines.

Without augers.	Upright	Angular
Douglas	5 50	6 75 dis 50
Snell's. Rice's patent	5 50	6 75 dis 40&10&10
Jennings	5 50	6 75 dis 45@45&10
Other machines	2 35	2 75 .....net
Phillips, with augers	7 00	7 50..... net

Bow Pins.

Humason, Beckley & Co.'s, Nos. 1 and 2 dis 60 and 10@60 and 10 and 5
Humason, Beckley & Co.'s other Nos. dis 70@70 and 10
Sargent & Co.'s ..... $17 and $18, dis 60 and 10
Peck, Stow & W. Co dis 50 and 10@50 and 10 and 5

Braces.

Q. S. Backus ..... discount 60&5@60&10
Barber's ..... discount 50
Spoffard's Patent ..... discount 50&10
Common Ball, American ..... $1.10@$1.15
Bartholomew's Nos. 25, 27, 30 ..... dis 50&10@60&5
Bartholomew's Nos. 117, 118, 119 ..... dis 70@70&5
Amidon's Barker's imp'd ..... dis 60 &10&5
Amidon's corner brace ..... dis 40@40&10
Universal ..... 8 inch $1.90; 10 inch $2.10
Buffalo Ball ..... 8 inch $1.10@$1.15

Brackets.

Shelf, plain, Sargent's list ..... 55&10@55&10&10
Fancy " " ..... dis 60&10@60 &10&10
Reading, plain ..... dis 55&10@55&10&10
Reading, rosette ..... dis 60&10@60&10&10

Bright Wire Goods.

Regular List ..... 75&10@75&10&5

Broilers.—Henis' self basting.

Inch	9	10	9x11
Per doz	$4 50	5 50	6 50

Buckets, Galvanized.

Hill's ₩ doz ..... 12qt 3 50 ..... 14qt 4 50
Iron clad 14 qt $8 ..... dis 40@40&5

Bull Rings.

Union Nut Co ..... dis 55
Sargent's ..... dis 66⅔&10
Hotchkiss' low list ..... dis 30
Humason, Beckley & Co.'s ..... dis 70&10to70&10&5
Peck, Stow & W. Co.'s ..... dis 50&10to50&10&10
Ellrich Hardware Co., white metal low list dis 50

Butts.

Discount

Wrought brass ..... 75 & 0@80
Cast brass, loose joint ..... 33⅓&10to33⅓&10&10
Cast Iron—
Fast joint, narrow ..... 50&10&5
Fast joint, broad ..... 55&10&5
Loose joint ..... 66⅔&10&5
Loose joint, jap ..... 66⅔&10&5
Loose joint, jap. with acorns ..... 66⅔&10&5
Loose pin, acorns ..... 66⅔&10&5
Loose pin. japanned acorns ..... 66⅔&10&5
Loose pin, acorns, japanned, plated tips 66⅔&10&5
Wrought iron—
Wrought, fast joint narrow ..... 65&10&2
Wrought, fast joint broad ..... 65&10&2
Wro't loose joint broad ..... 65&10&2
Table Butts, back flaps, etc ..... 65&10&2
Regular inside blind ..... 65&10&2
Light inside blind ..... 65&10&2
Loose pin ..... 65&10&2
Light loose pin ..... 65&10&2
Gem spring hinges 20
Blind butts, Parker ..... dis 75&2
Blind butts, Palmer ..... dis 50&5&10
Blind butts, Seymour ..... dis 70&2
Blind butts, Lull & Porter ..... dis 75&10@40
Blind butts, Nicholson ..... dis 45&10
Blind butts, Huffer ..... dis 50
Blind butts, Clark's Nos. 1, 3, 5 ..... dis 75&10&5
Blind butts, Manhattan Hardware Co ..... dis
Blind butts, Sargent Nos. 1, 3 ..... dis 75&10
Blind butts, Sargent's No. 12 ..... dis 75&10&10
Blind butts, Reading's Gravity ..... 7 @75&10
Blind butts, Shepard's "Noiseless" Nos. 50 60, 65, 45, 55 ..... dis 75&5
Blind butts, Shepard's Champion Gravity, No 75 ..... dis 75&10
Blind butts, Shepard's "Gravity," Nos. 1, 3 and 5 ..... dis 75&10&5
North's automatic blind fixtures, No. 2 for wood, $10 50; No. 3 for brick, $13 50 dis 25&2
Shepard's "O.S" Lull & Porter ..... dis 75&10&2½
Acme ..... dis75&10
Shepard's "Queen City" reversible ..... dis 75
Clark's imp'd shutter hinge, Nos. 0, 1, 1½, 2, 2½, 3 ..... 75&10&2½

Butcher's Cleavers.

Humason & Beckley Mfg. Co ..... dis 30&5@40
Bradley's ..... dis 25@30
Beatty's ..... dis 40@40&5

1	2	3	4	5	6	7	8
$16 50	19 00	21 50	24 00	27 00	30 00	33 50	36 50

New Haven Edge Tool Co.'s ..... dis 40
Albertson Mfg. Co ..... dis 33⅓@40

Can Openers.

Sprague No. 1 $2.00, 2 $2.25, 3 $2.50, dis50&10&10
Universal ..... ₩ doz $3 00, dis 35&5
Domestic ..... ₩ doz $2 50, dis 45
Champion ..... ₩ doz $2 00, dis 50

Caps—Percussion, ₩ 1000.

Hicks & Goldmark's } dis 35
F. L. Waterproof, 1-10's 50c
E. B. Trimmed Edge, 1-10's 65c
E. B. Ground Edge, Cent. Fire, 1-10's 70c
Double Waterproof, 1-10's 1.40
Musket Waterproof, 1-10's 54c
G. D 28
Elys waterproof central-fire $1.60

Cartridges.

Rim fire ..... discount 60&2
Pistol and rifle ..... discount 40&2
Military and sporting ..... discount 30&2

Carpet Stretchers.

Cast steel, polished ..... ₩ doz $3.25
Cast iron, steel points ..... per doz80c
Sockets ..... ₩ doz $1 75
Bullard's ..... dis25@25& 10

Cattle Leaders.

Humason, Beckley & Co.'s ..... dis 75
Sargent's ..... dis 66⅔&10
Hotchkiss ..... dis 30
Peck, Stow & W. Co ..... dis 50&10

Carpet Sweepers.

Queen ..... ₩ doz $16.00
Mystic ..... ₩ doz $16
Cottage ..... ₩ doz $15
Queen, with band ..... ₩ doz $18
King ..... ₩ doz $30

Garland ..... ₩ doz $18

Cards.

Horse and Curry ..... dis 10@10&10
Cotton ..... new list, Aug., 1883, dis 10
Wool ..... new list, Aug., 1883, dis 10

Casters.

Bed } dis 50&10@60&5
Plate } dis 50&10@60&5
Shallow Socket } dis 50&10@60&5
Deep Socket ..... dis 40&10
Yale Casters, list May, 1884 ..... dis 30 &10@40
Martin's patent ..... dis 45&10 to 50
Payson's Anti-friction ..... dis 60

Chains.

Trace, 6½-10-2 ..... ₩ pair 79c } dis 50&5@50&10
Trace, 6½-10-3 ..... ₩ pair 70c } dis 50&5@50&10
Trace, 7-10-2 ..... ₩ pair 86c } dis 50&5@50&10
German Halter Chain, list June, 1884, dis55&5@60
German Coil, list of June, 1881 ..... dis55&5@60
Galvanized Pump Chain ..... ₩ lb 5¼ to 8¾
Jack Chain, Iron ..... 75&10@75&10&5
Jack Chain, Brass ..... dis75@75&10

Chalk.

White ..... ₩ gross 55c
White Crayon ..... ₩ gross 12@12½

Chisels.

Socket Framing, and Frmer ..... dis 75@ 75& 5
Socket Framing and Firmer, Buck, Bros ..... dis 30
Socket Firmer & Framing, L. & I. J. White ..... dis 30@30 & 5
Tanged Firmers ..... dis 50 to 50&5

Clamps.

Snow's adjustable, iron ..... dis 40&5
Hammer's adjustable, iron ..... dis 15
Sargent's cabinet, iron ..... dis 66⅔&10

Clips.

Axle and spring bar, Norway iron ..... dis 55&5&5
Wrought-Iron felloe clips ..... ₩ lb. 5½c
Steel felloe clips ..... ₩ lb5c

Cockeyes.

discount 50

Cocks, Brass.

Hardware list ..... dis55&2

Coffee Mills.

Enterprise ..... 20 & 10@30

Compasses, Dividers, &c.

Compasses ..... dis 70@70&10
Calipers ..... dis 70@70&10
Dividers ..... dis 70@70&10
Bemis & Call Co.'s Dividers ..... dis 60&5
Bemis & Call Co.'s Compasses & Calipers .. dis 50&5
Bemis & Call Co.'s Wing & Inside or Outside ..... dis 50&5
Bemis & Call Co.'s Double ..... dis 60
Bemis & Call Co.'s (Call's Patent Inside) ..... dis 30
Excelsior ..... dis 50
Cook's Extension ..... dis 25
J. Stevens & Co.'s Calipers and Dividers ..... dis 25&10

Coopers' Tools.

Bradley's ..... discount 20
Barton's ..... discount 20 to 20&5
L. & I. J. White ..... 20 & 5

Corkscrews.

Humason, Beckley Mfg. Co ..... dis 40@40&10
Clough's patent ..... dis 33⅓@33⅓&5
Howe Bros. & Hulbert ..... dis 35

Corn Knives.

Corn knives, Bradleys ..... dis 10

Cradles.

Grain ..... dis 40&10@50

Crowbars.

Cast steel ..... ₩ lb 4
Iron, steel points 3½

Curry Combs.

Fitch's ..... dis 50&10@50&10&10
Rubber ..... ₩ doz. $10.00, dis 25@30

Curtain Pins.

Silvered glass ..... net
White enamel ..... net

Cutlery.

Beaver Falls ..... dis 33⅓
Goodell table ..... dis35@ 40

Dog Collars.

Embossed gilt ..... dis 30&10
Leather ..... dis 40

Door Springs.

Torrey's Rod, regular size ..... ₩ doz $1.30
Gem (Coil); list April 19, 1886 ..... dis 10

Drawing Knives.

Douglass & Witherby ..... dis75@75&5
Merrill ..... dis 60&10&10
L. & I. J. White ..... dis 20 & 5
Adjustable handle ..... dis 20 to25

Drills and Drill Stocks.

Blacksmiths' each ..... 1.60@1.65
Blacksmiths' self-feeding, each ... $7.50 discount 20
Breast, P. S. & W ..... discount 40 & 10
Breast, Millers Falls ..... each, $3.00 d 2 @25&10
Ratchet, Weston's ..... 20@25
Automatic Boring Tools ..... each, $1.75 to $1.85
Twist drills ..... 50&10
Morse ..... 50&10
Syracuse ..... 50&10
Standard ..... 50&10
Cleveland ..... 50&10
Williams ..... 50&10&10

Drill Chucks.

Morse's Beach Patent ..... each, $8.00, discount 20
Morse's Adjustable ..... each, $7.00, dis 20 to 20&5

Dripping Pans.

Buffalo, S. S. & Co ..... ₩ lb. 5¼@5½c

Egg Beaters.

Dover ..... per doz. $2.50
Acme ..... per gross $7.00

Emery.

Regular numbers ..... ₩ lb 4@6c
Flour and F. F ..... ₩ lb 2¾@5c
For emery paper and cloth, see sand paper.

Escutcheons Pins.

Iron, List Nov. 11, 1885 ..... dis 50&10@50&10&5
Brass ..... 65@65&5

Escutcheons.

Door Lock ..... Same discounts as Door Locks
Brass Thread ..... dis 60 to 60&10
Wood ..... dis 35

Files.

J. & Riley Carr, new list April 1,1883, ... dis 15
J. & Riley Carr horse rasps ..... dis 10
Best files of domestic make, according to brand ..... dis 60&10
Lower grade domestic files ..... dis 70@70&5
Heller's horse shoe rasp ..... dis 50&10

Faucets.

Frary's Patent Petroleum ..... dis 40 &10&2
Cork Lined ..... dis 70 to 70&10

Self-measuring, Enterprise, per doz $36 dis 20&10

Fly Traps.

Paragon ..... ₩ doz $2 00

Forks

Hay, Manure and Spading, list ..... dis 60&10&10
Phila list ..... 60@60&5

Fruit and Jelly Presses.

Enterprise Mfg. Co ..... dis 20&10@3

Fry Pr

Central Stamping Co.'s list ..... dis 40&10

No	0	1	2	3	4	5	6	7	8
₩ doz	$3 00	3 75	4 25	4 75	5 25	6 00	7 00	8 00	9 00

S. S. & Co ..... dis 40&10
"Acme" ..... dis 60@60&5

Fluting Scissors.

Discount 45

Fluting Machines

Eagle 3¼ inch ..... $2.15, dis 35
Geneva Hand Fluter, White Metal. ₩ doz. 12.00 ..... dis 25
Shepard hand, Nos. 85 $15.30, 95 $8, 110 $11 dis 40
Knox, 4½ inch rolls ..... $3 25 each } dis 35
Knox, 6 inch rolls ..... $3 60 each } dis 35
Crown, 4½ in. $3 50; 6-in. $4 00; 8-in. $6 50 each ..... dis 35
Crown Jewel ..... 6-in. $3 50 each, dis 35
American, 5-in. $3; 6-in. $3 40; 7-in. $4 50 each ..... dis 35
Crown hand fluter, Nos. 1 $15; 2, $12 50; 3, $10 ₩ doz ..... dis 30

Gauges.

Marking ..... dis 60&10
Wire ..... dis 10&10
Wire, Wheeler, Madden & Co ..... dis 10

Gimlets.

Nail and Spike ..... dis 50&10 & 5
"Eureka" Gimlets ..... dis 40&10
"Dismond" Gimlets ..... dis 40&10
Double Cut, Shepardson's ..... dis 45@45&5
Double Cut, Ives' ..... dis 50&10@60
Double Cut, Douglass' ..... dis 40&10
"Bee" ..... ₩ gross $12. dis 25

Glue Pots.

Tin enameled ..... dis 30@35
Family, Howe's ..... dis 40

Grindstone Fixtures.

Sargent's ..... dis 70&10

Gun Wads.

U. M. C. & W. R. A.—B. E., 1 lup ... 2 00 } dis 20&2
U. M. C. & W. R. A.—B. E., 9&10 ... 2 30 } dis 20&2
U. M. C. & W. R. A.—B. E., 7&8 ... 2 60 } dis 20&2
U. M. C. & W. R. A.—P. E., 1 lup ... 3 10 } dis 20&2
U. M. C. & W. R. A.—P. E., 9&10 ... 4 00 } dis 20&2
U. M. C. & W. R. A.—P. E., 7&8 ... 4 90 } dis 20&2
Eley's B. E., 11 up 1 75
Eley's P. E., 11@20 ..... 2 00

Hack Saws.

Griffin's Hack Saws, complete ..... dis 40&10@50
Griffin's Hack Saw, Blades only ..... dis 40&10@50
Star Hack Saws and Blades ..... dis 25

Halters.

Covert's patent ¾ jute ..... dis 50&2
Covert's hemp horse and cattle ties ..... dis 50&2
Covert's jute horse and cattle ties ..... dis 60&10&2
Meneely's pat adjustable hemp and jute .. dis 50&10
Meneely's hemp and jute horse and cattle ties ..... dis 50&10

Hammers.

Maydole's ..... discount 25@25&10
Cheney's new list, Jan 15, 1887 ..... dis 40@40&10
Buffalo Hammer Co ..... dis 40@40&10
Magnetic Tack, No. 1, 2, 3, $1.25, $1.50 and $1.75, dis 30&10
Heavy hammers and sledges under 5 lbs, 35c, over 5 lbs, 30c dis60

Hand Cuffs and Leg Irons.

Providence Tool Co., hand cuffs, $15 ₩ doz ... dis 10
Providence Tool Co., leg irons $25 ₩ doz ..... dis 10
Tower's ..... dis 25
Daley's improved hand cuffs: 2 hands, polished, ₩ doz. $48; Nickeled, $57; 3 hands polished, ₩ doz $72; Nickeled, $84 ..... dis 20

Handles—

Door or Thumb Latches.

Per doz	Nos. 0	1	2	3	4	
Sargent's	90	1 00	1 18	1 35	1 50	dis 60&10 & 10

Roggin's Latches ..... ₩ doz. 30@35c
Bronze Iron Drop Latches ..... ₩ doz. 70c net
Jap'd store door handles—Nuts, $1 62; Plate $1 10; no plate $0 88 ..... net
Barn door ..... ₩ doz $1 40, dis 10&10
Wrought chest ..... dis 70
Surface chest ..... dis 70
Flush chest ..... dis 70
Lifting ..... dis 70
Saw and plane ..... dis 40&10@40&10&5
Hammer and hatchet ..... dis 25@25&2
Brad awls ..... ₩ gross $2 00
Hickory firmer chisel, assort ..... ₩ gross $4 50 } dis 40
Hickory firmer chisel, large ..... ₩ gross $5 00 } dis 40
Apple firmer chisel, assorted ..... ₩ gross $5 00 } dis 40
Apple firmer chisel, large ..... ₩ gross $6 00 } dis 40
Socket firmer chisel, assorted ..... ₩ gross $3 00 } dis 40
Socket framing chisel, assort ..... ₩ gross $5 00 } dis 40
File, assorted ..... ₩ gross $2 75 } dis 40
Auger, assorted ..... ₩ gross $5 00 } dis 40
Auger, large ..... ₩ gross $7 00 } dis 40@40&10

Hangers.

Barn Door, old patterns ..... dis 60&10 &10@70
Barn Door, New England ..... dis 60&10&10@70
Climax (Anti-Friction) ..... dis 55
Zenith Anti-Friction Wood Track ..... dis 55
Reed's Steel Arm ..... dis 40
Challenge ..... dis 60
"Champion" Medina Mfg. Co ..... dis 6 &10
Sterling Improved (Anti-friction) ..... dis 65&10
Victor, No. 1, $15; No. 2, $16.50; No. 3, $18 .. dis50&2
Cherritree ..... dis 50 & 5
Kidder's ..... dis 50&10@60
U. S., wood track ..... dis 65
The "Boss" ..... dis 60
Terry's Patent, 5 in., 12.00; 3½ in., 10.00, dis 50 & 50&5
Cronk No. 4, 12.00; No. 5, 14.40; No. 6, 18.00 ..... dis 50&10@50&15
Architect ..... ₩ set 6.00, dis 25
Eclipse ..... dis 20&10
Felix ..... ₩ set 4.50, dis 20
Hamilton Wrought dis50

Harness Snaps

German, new list ..... dis 40&10
Covert, New Patent, new list ..... dis 50&5&2

Hay Knives.

Lightning ..... per doz. $18 dis 25
Electric ..... ₩ doz $9.50@10.50

Hinges.

Wrought Strap and T Hinges ..... 70&7½&2
Screw, hook and strap, 8 10 12 in ..... 4@4½
14 to 36 in ..... 3 @3½

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FOREMAN OF MACHINE SHOP. Must be strictly temperate, experienced on Blast Engine. Furnace and Architectural Iron work, and accustomed to handling men. Also, Foreman of Foundry, and one Pattern Maker experienced in above line of work. None other need apply. No. 1 references required. 5t

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12 in. x 5 ft. Shepard Foot Power Lathe, new.
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10-in. New Haven Shaper, second hand.
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No. 3 Bell's Steam Hammer, 22x10 cylinder, in good order.
2 Bolt-Heading Machines.
1 Double-Head Bolt-Cutter, ⅝ to 1½ in., second hand.
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Lot Second-hand Stave Machinery.
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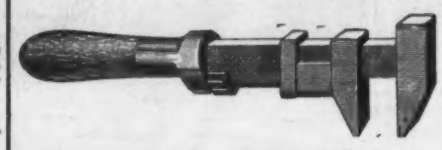

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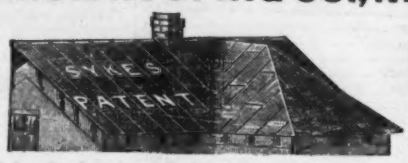

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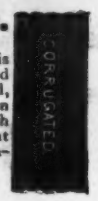

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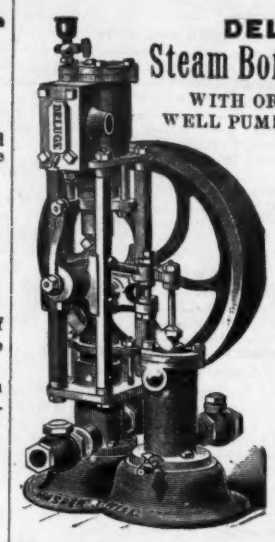

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Oval Boilers, Saucepans .....dis 30@5
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Inch	6	7	8	9
Each	55	60	65	75

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Perfect rings.....℔ doz boxes $1.75@$2
Perfect ringers.....℔ doz $2.50
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"Moore's" hand hoist, with lock brake .....dis 15
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Ceiling Sargent's list.....dis 55&10
Coat and Hat, Sargent's list.....dis 55&10
Wire Coat and Hat, Gem.....dis 45
Wrought Staples and Hooks & Staples, list Jan 12, 1887.....dis80&10
Wire Screw Hooks and Screw Eyes. dis 75&10
Hooks and Eyes—Malleable Iron.....dis 70
Hooks and Eyes—Brass.....dis 60&10&10

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No.	10	9	8	7	6
Ausable. ℔ lb	23	24	25	26	28
Putnam. ℔ lb	19	20	21	22	24

dis25&10to25&10&10
...dis 5 & 7to5&7&5

Horse Shoes.

Burden at factory.....℔ keg $4.00
R. I. Horse Shoe Co., Perkins' Imp. at factory.....℔ keg $4 00
Mule Shoes, at factory.....℔ keg $5.00

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dis.....75&10@80
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American Ice Chisel Pol'd.....℔ doz. $3.00, dis 20

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Ice Tongs.

Champion .....℔ doz $4.00, dis 25&10
Family.....℔ doz $2.75, dis 20@25

Jack Screws.

Millers Falls list.....dis 50to50&5

Kettles.

Brass, 7 to 17 inches inclusive.....℔ lb 20c. net.
Brass larger than 17 inches.....℔ lb 22c. net.
Enameled and Tea Kettles.....See Hollow Ware

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Eagle, cabinet, trunk and padlock...dis 33⅓ and 2

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Carriage, Japanned.....℔ gross 80c. dis 60&10
Base, Rubber Tip.....dis 70&10&5
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Door Mineral .....
Door porcelain japanned ...
Door porcelain plated .....
Door porcelain.....
} List Dec 30 1886 and Feb 2 1887 55&5&2 @55&10 &5&2
Shutter, Porcelain.....dis 65&10

Ladles.

Melting, Sargent's.....dis 55&10
Melting, Reading.....dis35&10
Melting, Monroe's Patent.....℔ doz $4.00, dis 40
Melting, P. S. & W .....dis 35&10@40

Lanterns.

Tubular No. 9.....$5.75 per doz
" " 1.....
Tubular, Lift Wire, No. 0. ℔ doz..... 8.50
Tubular, Lift Wire, No. 1. ℔ doz 6.25
Police, Small, $6.00; Med., $7.25; Large, $9.75.....dis20@25

Locks, Bolts, etc.

[Nimick & Brittan Manufacturing Co., Pittsburgh].
Discount Sheet No. 8 [March 10, 1886].
No. 0221..... $2.40 per doz.
No. 0401..... 2.65 "
No. 01051..... 2.40 "
Door locks, knobs and latches.....dis 45
Escutcheons and keys.....dis 45
Sash locks.....dis 55
Padlocks and padlock keys.....dis 75
Bell pulls, mineral, porcelain and jet.....dis 40
Bell pulls, bronze plated.....dis 40
Bell pulls, Egyptian bronze.....dis 40
Bell pulls, genuine bronze.....dis 50
Lever bell pulls, genuine bronze.....dis 55
Butts, genuine bronze.....dis 60
Butts, bronze plated.....dis 70
Butts, Egyptian bronzed.....dis 70
Store door locks and latches.....dis 60
Store door handles.....dis 60
Shutter hinges and flaps, genuine bronze.....dis 60
Shutter hinges, bronze plated.....dis 75
Shutter hinges, Egyptian bronzed.....dis 75
Shutter flaps, bronze plated.....dis 60
Shutter flaps, Egyptian bronzed.....dis 60
Parliament butts, genuine bronze.....dis 60
Parliament butts, bronze plated.....dis 75
Parliament butts, Egyptian bronzed .....dis 75
Flush bolts, genuine bronze.....dis 60
Flush bolts, bronze plated.....dis 75
Flush bolts, Egyptian bronzed.....dis 75
Shutter knobs, genuine bronze.....dis 60
Shutter knobs, bronze plated.....dis 70
Shutter knobs, Egyptian bronzed .....dis 60
Shutter bars, genuine bronze.....dis 60
Shutter bars, bronze plated .....dis 70
Shutter bars, Egyptian bronzed .....dis 70
Sash lifts, genuine bronze .....dis 50
Sash lifts, bronze plated.....dis 70
Sash lifts, Egyptian bronzed.....dis 70
Sash pulls and plates, genuine bronze.....dis 60
Push plates, genuine bronze.....dis 60
Drawer pull genuine bronze.....dis 50
Drawer pulls, bronze plated .....dis 70
Drawer pulls, Egyptian bronzed.....dis 70
Letter box plates, genuine bronze.....dis 00
Letter box plates, bronze plated.....dis 60
Letter box plates, Egyptian bronzed .....dis 65
Thumb latches, Egyptian bronzed.....dis 75
Burn door locks .....dis 33⅓

Lemon Squeezers.

Porcelain lined.....℔ doz $6 00, dis 25&30
Wood.....℔ doz $3 00, dis 35
Dunlap's improved.....℔ doz $3 75, dis 20
Sammis'.....No. 1, $5; 2, $9, 12, $18 ℔ doz dis25&10
Jennings' "Star" ..... doz $2 50
The "Boss".....℔ doz $2.50
Dean's No. 1. ℔ doz $6 2, $3 25; 3, $1 90....dis
Little giant.....dis 50@50&5

Locks.

Cotton Chalk.....dis 55
Silver Lake, Braided, Nos. 0, $6.00; No. 1. $6.50; No. 2, $7.00; No. 3, $7. gross .....dis 25
Masons' Linen, No. 3½, $1.50; No. 4, $2.00; 5 No. 4½, $2.0 5
Masons' Colored Cotton.....dis 4
Wire Clothes, No 18, $3.50; No 19, $3.25; No. 20 $2.75;.....

Lumber Tools.

Ring peavies, "Blue Line" finish.....℔ doz $20 00
Ring peavies, common finish.....℔ doz $18 00
Steel socket peavies.....℔ doz $21 00
Mall. iron sock t peavies.....℔ doz $19 00
Cant hooks, "Blue Line" finish.....℔ doz $16 00
Cant hooks, common finish.....℔ doz $14 00
Cant hook's mall. socket clasp, "Blue Line" finish .....℔ doz $16 00
Cant hooks, mall, socket clasp, common finish.....℔ doz $14 50
Cant hooks, clip clasp, "Blue Line" fin..℔ doz $14
Cant hooks, clip clasp, common finish...℔ doz $12
Hand spikes.....℔ doz 6 ft., $15 00; 8 ft., $20 00
Pike poles, pike and hook

	12 ft.	14 ft.	16 ft.	18 ft.	20 ft.
℔ doz	$11.50	$12 50	$14 50	$17 50	$21 50
Pike poles, pike only. ℔ doz	$10 00	$11 00	$13 00	$16 00	$20 00
Pike poles, not ironed. ℔ doz	$6 00	$7 00	$9 00	$12 00	$16 00

Setting poles, doz 14 00 $15 00 $17 00
Swamp hooks .....℔ doz $18 00
Landing blocks.....℔ doz $22 50
Skidding tongs.....℔ doz $51 00
Log binders.....℔ doz $26 00
Bended boot calks, 1 to 5 M, dis 25; 5 to 10 M, dis 30
Square steel boot calks.....dis 40
Chain rafting dogs.....℔ 100 $12 50
Ring rafting dogs..℔ 100, med., $10 00; large $12 00
Timber grapples.....℔ doz $30 00

Mallets.

Hickory .....dis 20&10
Lignumvitæ.....dis 20 &10
Penfield Block Co., Lignumvitæ and Hickory.....dis 30@30&10

Mattocks.

Regular list.....dis 60&5@60&10

Meat Cutters.

Dixon's (P.S.&W.)	1	2	3	4
℔ doz.	$14.00	$17.00	$19.00	$30.00

dis 45

Draw Cut Nos.	5	2	6	8	10
Each	$50.00	$75.00	$80.00	$225.00	400.00

dis 20@25

Woodruff's (P S & W) per doz No 100 $15 No 150 $18dis 45

Hale's—Nos.	11	12	13
	$27	$33	$45

dis 70&5@70&10

Mincing Knives.

Am. (2d quality), ℔ gro, 1 blade, $7; 2 blades, $12; 3 blades, $18.....net
Lothrop's .....dis 20&10
Smith's, ℔ doz. single, $2 00; double, $3 00 dis 40@45
Cowles Hardware Co.....dis 50&10@60

Money Drawers.

℔ doz.....$18 00

Molasses Gates.

Stebbins' pat .....dis 70@70&10
Stebbins' genuine .....dis 66⅔&10
Stebbins' tinned ends.....dis 40&10
Chase's hard metal .....dis 50&10
Bush's.....dis 20
Lincoln's pattern.....dis 66⅔&10
Weed's .....dis 20&10

Boss Nos....	1	2	3	4
	$7 00	8 00	9 00	10 00

℔ doz. dis 60&10&10

Nails (wire).

List Apr 13 1886.....dis50&10
Salem Standard Penny Nails, ℔ keg cardrate $.60

Nuts and Washers.

Size of bolt in	¼	5-16	⅜	½	⅝	¾	1
Square	8⅞	7.3	5.8	4.9	4.3	4	3.6
Hexagon	21	12	8¾	6¼	5½	5¼	4¾
Washers	8¼	7¼	6¼	4¾	4	4	4

In lots less than 100 lbs, ℔ lb add ½c, 1 lb boxes add 1c to list

Nut Crackers.

Table (Humason & Beckley Mfg. Co.).....dis 40
Blake's pattern.....℔ doz. $2 00, dis 10
Turner & Seymour Mfg. Co.....dis 50

Oakum.

Government.....℔ lb 6½c
U. S. Navy.....℔ lb 6 c
Navy .....℔ lb 5¼c

Oilers.

Zinc and Tin.....dis65&10@70
Brass and Copper.....dis 50&10@50&10&5
Malleable (Hammer's), No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ℔ doz.....dis 10@ 10&10

Packing, Steam.

N. Y. Belting & Packing Co .....dis 60
American Packing .....10@11c
Russia Packing.....14c
Italian Packing.....13@14c
Cotton Packing .....15@17c

Pencils.

Faber's Carpenters' .....high list, dis 50
Faber's Round Gilt.....℔ gro $5.25 net
Dixon's Lead.....℔ gro $4.50 net
Dixon's Lumber.....℔ gro $6.75 net
Dixon's Carpenter's.....dis 40&10

Picks.

Railroad, 5 to 6 lbs..... $11 dis 60&10
" 6 to 7 lbs..... $12 dis 60&10

Pinking Irons.

℔ doz .....65c. net

Picture Nails.

Brass head, Sargent's list.....
Brass head, combination list.....
} dis 50&10&10
Porcelain head Sargent's list, dis.....50&10&10
Porcelain head, combination list.....dis 40&10

Plane Irons.

L. & I. J. White.....dis 25

Pliers and Nippers.

Button's Patent .....dis 30&10@40
Hall's Pat. Compound Lever Cutting Nippers, No. 2, 5 in., $13.50; No. 4, 7 in., $21 00 ℔ doz. .....dis 20&10@33⅓
Gas Pliers.....dis 60
P. S. & W. Cast Steel .....dis 50
P. S. & W. Tinners' Cutting Nippers add 6 per cent. dis 10

Plumbs and Levels.

Standard list.....dis 70&10@70&10&10
Disston's.....dis 45&10
Pocket levels.....dis 70&10@70 &10&10
Davis' inclinometers.....dis 10&10

Post Hole and Tree Augers.

Samson Post Hole Digger..℔ doz. $36.00, dis 20&10
Fletcher Post Hole Augers ....℔ doz. $36.00, dis 20
Eureka Diggers.....℔ doz. $16 00 @ $17.00
Leed's.....per doz $8.00 @9 00
Vaughan's Hollow Tube Post Hole.....$24.00 dis40

Potato Parers.

White Mountain.....℔ doz $5.00@$5.50
American Combination.....℔ doz $8.00
Hoosier .....℔ doz $13.50

Pruning Hooks and Shears.

Disston's Combined Pruning Hook and Saw ℔ doz $18.00.....dis 20&10
Disston's Pruning Hook.....℔ doz $12.00 dis 20&10
E. S. Lee & Co.'s Pruner.....dis 40
Pruning Shears .....℔ doz 3.75@$4.00 net

Pulleys.

Hot House .....discount 60&10
Japanned Screw.....discount 60&10
Brass Screw.....discount 60&10
Japanned Side.....discount 60⅔&10
Japanned Clothes Line.....discount 60&10

Pumps.

Cistern, best makers.....dis 50@10&60
Pitcher spout, best makers...dis 60&10@60&10&10
Pitcher spout, cheaper goods... dis 70&5@70&10&5

Punches.

Saddlers' or Drive.....℔ doz. good quality, 60@65c
Bemis & Call Co.'s Cast Steel Drive.....dis 50&5
Bemis & Call Co.'s Springfield Socket.....dis 50&5
Solid Tinners.....℔ doz. $1.44, dis 55

Rails.

Sliding Door, Wrought Brass...℔ lb 35c dis 20@25
Sliding Door, Iron, Painted ℔ foot 4c dis 20&10&5

Rakes.

Cast Steel.....dis60&10&10@70
Malleable .....dis 60&10&10@70

Razors.

J. R. Torrey Razor Co.....dis 20
Wostenholme & Butcher..... $10 @£...dis 10

Rivets.

Iron, Thousand, list October 1, 1886 ..... dis 60
Iron, Ordinary, Cooper's Block and Carriage, list October 1, 1886..... dis 60
Copper .....dis 60@60&5

Rods.

Stair, Brass.....dis 25&2
Stair Black Walnut.....40c ℔ doz

Rollers.

Barn door, Sargent's list, ... dis 60&10&10
Acme (Anti-Friction).....dis 55
Union barn door roller .....dis 70

Rope.

Manufacturer's list Mar 8, 1887..... dis 1c ℔ lb
Manilla.....⅝ inch ℔ lb 13½
Manilla.....¼ and 5-16 inch ℔ lb 14
Sisal.....½ and larger .....per lb 11¾
" .....⅜.....per lb 12¼
" .....¼ & 5-16.....per lb 12¾

Rules.

Boxwood..... discount 80&10@80&10&10

Sad Iron.

From 4 to 10 lbs at factory...per 100 lbs $2.50@2.75
Self-heating.....℔ doz $9 net
Self-Heating, Tailor's.....℔ doz $18 net
Gleason's Shield and Toilet.....discount 25
Mrs. Potts's Irons.....dis 40
Enterprise Star Irons.....discount 40
Com. Fluter and Sad Iron...℔ doz $15, discount 15

Sash Weights.

Per ton $25.00

Saws.

Disston's Circular..... discount 45
Disston's hand panel, rip &c ..... discount 25
W. M. & C., Champion Regular.....per foot 26c
W. M. & C., " Thin Back.....℔ ft 29 c
Atkins' circular 50
Atkins' silver steel diamond X cuts.....℔ ft 75c
Atkins' concave tooth Dexter X cuts.....55c
Atkins' special steel diamond X cuts.....32c
Atkins' turtle tooth X cuts.....39 c
Atkins' hollow back X cuts.....21@22c
Atkins' shingle, mulay, drag, &c.....dis 45

Saw Frames.

White, Vermont.....℔ gross $9@10
Red, polished & varnished ℔ doz $1.50, ...dis 25

Saw Sets.

Aiken's Genuine.....$13.00, dis 50 &10
Morrill Saw Sets No. 1 $15.00; No. 3 and 4 $24.00 .....dis 40 &10
Atkins' adjustable.....℔ doz $6 00
Atkins' criterion.....℔ doz $7 00

Scales.

Hatch, Counter, No. 171 .....℔ doz $21.00
Hatch, Tea, No. 161.....℔ doz $7.50
Chatillon's Grocers .....dis 50
Family Turnbulls.....dis 30@30&10
Scale Beams, List of January 12, 1882 dis 60&5@60&10

Scrapers.

Adjustable Box Scraper (S. R. & L. Co.) $6.50.....dis 30&10
Box, 1 Handle.....℔ doz $4.00, dis 10
Foot.....dis 50&10@60

Screw Drivers.

Stanley R. & L. Co.'s Varnished Handles dis 65&10
Stanley R. & L. Co.'s Black Handles.....dis 60&10
Sets Interchangeable.....℔ doz $18.00 dis 25

Screws.

Wood Screws—List Jan 27, 1887.

Flat head iron	dis 75	Extra 5&10 often given
Round head iron	dis 70	
Flat head brass	dis 70	
Round head brass	dis 65	
Flat head bronze	70	
Round head bronze	65	

Machine, flat head, iron .....dis 55
Machine, round head, iron 50
Bench and hand—
Bench, iron .....55&10@55&10&10
Bench, wood, beech, per dozen $2.25.....
Bench, wood, hickory.....20 & 10
Sand, wood.....25&10@25&10&5
Lag or coach.....dis 66⅔@70
Coach, patent gimlet point..... 70&10
Bed.....25&5
Hand rail, Sargent's.....66⅔&10
Hand rail, Humason, Beckley & Co.'s 70& 10 @ 75
Hand rail, Am Screw Co.....75

Saw Tools.

Atkins' patent.....℔ doz sets $6 00

Shears.

American (Cast) Iron.....dis75&10@75&10 & 5
Pruning .....See Pruning Hooks and Shears
Barnard's Lamp Trimmers.....℔ doz $3.75
Tinners'.....dis 20&2
Heinsch's List, Dec. 1881..... dis 60 &10&5
Heinsch's Tailor's Shears.....dis 33⅓

Scroll Saws.

Lester, complete, $10.00.....dis 25
Rogers, complete, $4.00.....dis 25

Sheaves.

Sliding Door R. & E. list Dec 18, 1885... dis 55&2
Sliding Door, Patent Roller.....dis 60&10&2
Sliding Door, Pat'nt Roller, Hatfield's..... dis 70
Sliding Door, Russell's Anti-Friction Dec. 18, 1885 dis60&2
Sliding Door, Moore's Anti-Friction .....dis 60
Sliding Shutter, R. & E. list..... dis 60&10&2
Sliding Shutter, Sargent's list..... dis 60&10
Sliding Shutter, Reading list.....dis 60&10&10
Moore's Anti-Friction.....New list, dis 60

Ship Tools.

L. & I. J. White.....dis 20 & 5

Shovels and Tongs.

Iron Head..... dis 60&10@60&10&5
Brass Head.....60&10&10

Sieves.

Buffalo metallic, S. S. & Co., new list... dis 50&25
Barler's flour sifters .....℔ doz $2 00

Slates.

School, by case..... dis 50@50&5

Spoke Shaves.

Iron.....dis 45
Wood .....dis 30

Spoke Trimmers.

Bonney's.....℔ doz $10.00 dis 50
Stearns'.....℔ doz $9.00 dis 20&10

Spoons.

Basting Spoons ..... dis 25&2
Britannia.....dis60&10@60&10&10
Wm. Rogers Mfg Co.....dis 50&10@60
H & E Silver Co. Steel Silver Plated, teas $15.00 Tables $30.00.....dis 50@50&10

Squares.

Steel and iron .....
Nickel plated.....
} dis 75&10
Try square and T bevels .....dis 60&10@60&10&10
Disston's try square and T bevels ..... dis 45
Winterbottom's try and miter.....dis 30&10

Steelyards.

dis 40&10@50&5

Stocks and Dies.

Blacksmith's .....dis 40@40& 5
"Lightning" screw plate .....dis 25@30

Stone.

Hindostan, No. 1, 3¼c; Axe, 4½c; Slips 5½c
Sand Stone.....℔ lb. 2½c
Washita Stone .....No. 1, ℔ lb 17
Turkey Oil Stone.....4 to 5 in.....℔ lb 60c
Turkey Slips.....$2.00 ℔ lb
Lake Superior.....℔ lb 17c
Lake Superior Slips .....℔ lb 31@32c
Washita Slips No 1.....℔ lb 37@38
Washita No 2 stone.....℔ lb 13c
Arkansas Stone .....1 45@1 50

Stove Boards.

Buffalo zinc, S. S. & Co.....dis 50

Shovels and Spades.

Ames' list Nov 1 1885.....discount 20
Griffith's black iron.....dis 50&10
Griffith's solid cast steel R.R. goods.....dis 20

Stove Polish.

Joseph Dixon's.....℔ gross $6 00 dis 10
Gem .....℔ gross 4 50 dis 10
Gold medal.....℔ gross 6 00 dis 25
"Mirror".....℔ gross 6 00 dis —
Lustro.....℔ gross $4 75 net
Ruby.....℔ gross $3 75 net
Rising Sun.....℔ gross $5 50 net
Dixon's plumbago.....℔ lb 8c. net
Boynton's Noon Day, ℔ gro, ... $5 00;

Trowels.

Lothrops' Brick and Plastering.....dis 25
Reed's Brick and Plastering.....dis 15
Disston's Brick and Plastering.....dis25
Brade's brick.....dis 25

Tacks, Brads, &c.

New List, September 1, 1882, & Supplement Jan. 1, 1886.
American iron carpet tacks all kinds.....dis 75
Steel carpet tacks all kinds.....75
Swedes Iron carpet tacks all kinds.....75
Swedes iron tacks.....70&10
Swedes iron Upholsterers' tacks.....70
Tinned Swedes iron tacks 70
Tinned Swedes iron Upholsterers' tacks.....70
American iron cut tacks .....70&5@70&10
Copper tacks .....60@60&5
Copper finishing and trunk nails.....60@60&5
Cigar box nails 55
Finishing nails.....60@60&10
Hungarian nails and miners' tacks.....60&10
Gimp and lace tacks.....60&10&10@70
" " " tinned.....60&10&10@70
Trunk and clout nails .....60&10
Tinned trunk and clout nails.....60&10
Basket nails.....60&10
Chair nails .....60&10
Common and patent brads .....60&10
Tinned capped trunk nails 15

Tinware.

Stamped, Central Stamping Co.'s list.....dis 25&2
Japanned, Central Stamping Co.'s list.....dis 25&2
Pieced, Central Stamping Co..... dis25 &2
} Extras sometimes given.
Pieced S. S. & Co..... dis 33⅓
Japanned S. S. & Co .....dis 33⅓
Stamped, S. S. & Co new list..... dis 33⅓

Tobacco Cutters.

Enterprise Mfg. Co. (Champion)..... dis 20&10@30

Traps.

Game, Newhouse.....dis 35@40
Wood, mouse.....15c ℔ doz holes
Delusion, mouse.....℔ gross $18 00 dis 15

Transom Lifters.

Wollensak's Patent.....dis 50

Twine.

	BC.	P.
No. 12, Flax Twine, ¼ and ½ lb Balls	20½c	28c
No. 18, " " ¼ and ½ "	18½c	28c
No. 36, " " ¼ and ½ "	17c	26c
No. 264, Mattrass ¼ and ½ "		45c
Chalk Line, Cotton, ½ lb Balls		25c
Mason Line, Linen, ½ "		55c
5-Ply Hemp, ¼ and ½ lb Balls (Spring Twine)		12
5-Ply " 1 lb Balls		12½c
5-Ply " 1½ lb Balls		11½c
Cotton Wrapping, 5 Balls to lb		14@15c

TRAVELER'S REGISTER.

Standard Time.

Cleveland, Columbus, Cincinnati & Indianapolis.

DEPARTURE.

No. 3, Col. Cin. & Ind Expr.....7 45 A. M.
No. 5, Col., Cin. Ind. and St L. Ex.....*10 00 A. M
No.9, Col., Cin., Ind. and St. Louis Ex.* 7 00 P. M
No. 23, Grafton & Wheeling Ex ..... 6 45 A. M
No. 27, Columbus Accommodation ..... 3 30 P. M
No. 29, Massillon and Uhrichville Ex..... 4 00 P. M

ARRIVALS.

No. 2, Col., Cin. Ind and Mattoon Ex.... 9 45 P. M
No. 4, Col., Cin. & St. Louis & Ind. Ex * 2 55 A. M
No. 8, Col . Cin.. Ind. and St. Louis Ex. *7 30 A. M
No. 24, St. Louis, Ind. & Col. Ex..... *6 50 P. M
No. 22, Massillon and Uhrichville Ex.... 9 35 A. M
No. 20, Galion Accommodation..... 9 15 A. M
No. 12, Columbus and Cincinnati Ex... *2 35 P. M
No. 26, Wheeling Express..... 6 50 P. M
*Daily .all other trains daily except Sunday.

Cleveland & Pittsburg.

	DEPART.	ARRIVE.
Mail.....	7 45 a m	2 25 p m
New York Express.....	12 10 p m	6 30 p m
Alliance Accommodation.....	5 00 p m	8 25 a m
Night Express.....	11 10 p m	5 25 a m

Train leaving at 2 10 p m has Pullman Buffet Sleeper from Cleveland to New York without change.

Mt. Vernon & Pan Handle Route.

C., A. & C. Ry. Co.	Arrive.	Depart.
Akron, Col. & Cin. "Flyer"	5 15 p m	7 40 a m
Akron, Col. & Cin. Night Express.....	6 40 a m	8 00 p m
Cleveland & OrrvilleAccom	11 30 a m	2 15 p m

The 8 p. m. train runs daily. Elegant Pullman palace sleeping cars attached. All other trains daily except Sunday.

New York, Pennsylvania and Ohio.

	ARRIVE.	DEPART.
N. Y. & Pitts. Express.....	16 10 a m	*8 25 a m
Fast N. Y. & Pitts. Express..	*10 50 a m	*2 45 p m
Mahoning Accommodation...		†6 45 a m
Pittsburgh Local Express...	† 9 25 p m	
Youngstown Local.....	†8 10 a m	
Mahoning div. and Pitts Local		*11 40 a m
Mahoning Val Accom.....		*4 30 p m
Pittsburgh accomodation	*1 18 p m	

* Daily. † Daily except Sunday. ‡ Daily except Monday.

Lake Shore & Michigan Southern Railroad.

TRAINS GOING EAST.	Arrive from West.	Depart East.
No. 4, Fast Limited Ex.....	*2 55 a m	*3 05 a m
No. 8, N. Y., B't'n & At. Ex	*8 30 a m	*8 55 a m
No. 26, Elyria Accom.....	†7 45 a m	.....
No. 24, Toledo & Buffalo Accom. via Sandusky.....	†10 30 a m	†10 45 a m
No. 24, Toledo Accommodation via Norwalk.....	†10 30 a m	†10 45 a m
No. 10, St. Louis & N. Y. Ex.		*12 00 noon
No. 12, N. Y. & Bos. Ft. Ex.	*2 10 p m	*2 45 p m
No. 2, Night Ex. via Norw'k	9 40 p m	†10 00 p m
No 28, Conneaut Accom.....		†4 25 p m

TRAINS GOING WEST.	Arrive from East.	Depart West.
No. 1, Fast Limited Ex.....	*12 15 a m	*12 25 a m
No.23, Cleveland Express	*2 15 a m	
No. 3, Chi. Ex. via Sand'y..	15 20 a m	†5 35 a m
No.25, Mich. Ac. via Norw'k	.....	†5 35 a m
No. 21, Toledo Ex. via Norwalk and Sandusky.....	†12 50 p m	†3 20 p m
No. 5, Fast St. Louis & Chicago Ex. via Sandusky.....	*10 45 a m	*10 50 a m
No.9, Chi. Pac. Ex. via Nor'k	*6 15 p m	*6 40 p m
No. 31, Elyria Accommodation. to Elyria only.....		†4 30 p m
No. 27, Conneaut Accom.....	†8 10 a m	.....

Sunday train for Nottingham– Depart 8:15 a. m. and 1:45 p. m.; returning, leave Nottingham at 8:50 a. m. and 3:45 p. m.

Reference marks—*Daily. †Daily except Sunday. ‡Daily except Monday.

A local Cleveland and New York Sleeper and dining car daily on No. 10, leaving Cleveland at 12 noon, arrives Grand Central Depot, New York 7:30 a. m.

For further information as to trains and connections apply at the Union Ticket Office, corner Bank and Superior-sts., under Merchants' Bank.

M. E. GAUL, City Pass. Ag't. A. J. SMITH, Gen'l Pass. & Ticket Ag't.

Cleveland and Canton Railroad.

Arrive.—Canton, Sherrodsville and Coshocton 9 55 a.m., 7 00 p.m.
Kent —*7 50 a.m.
Bedford—*7:50 a.m., 1:05 p.m., 6 40 p.m.
Newburgh and Miles avenue—6-00 a.m., *7:10 a.m., 4:15, p.m. 9:15 p.m.
Depart—
Canton, Sher'dsville & Cosh't'n—7:00 a.m. and 3:10 p.m.
Kent—*5:45 p.m.
Bedford—11:10 a.m., 4:40 p.m., *5:45 p.m., 10:35 p.m.
ewburgh and Miles Avenue—6:12 a.m., 2:00 p.m., 8:10 p.m.
Trains marked with * run daily. All others daily except Sunday.
Depot at Ontario street, opposite Huron street

Valley Railway.

	ARRIVE.
From Canton.....	9 00 a m
From Akron.....	2 15 p m
From Valley Junction.....	6 30 p m
	DEPART.
For Valley Junc. and interme. points...	8 3[illegible] a m
For Valley Junc. and interme. points...	2 20 p m
For Canton and intermediate points	5 30 p m

Trains leave depot, South Water Street.

Cleveland, Lorain and Wheeling.

	DEPART.	ARRIVE.
Wheeling Express.....	6 45 a m	6 50 p m
Uhrichsville Express.....	4 00 p m	9 35 a m

UNION ELECTROTYPE FOUNDRY
829 SHERIFF ST. CLEVELAND O

WHEELING & LAKE ERIE

TIME TABLE—IN EFFECT NOV. 1, 1886.

Central Standard Time.

EASTWARD.	No. 5.	No. 7.	No. 9.*	No. 1.*
Toledo.....lv	7 45 AM	12 30 PM	4 45 PM	.....
Oak Harbor..ar	8 43	1 22	5 38	.....
Fremont.....	9 07	1 47	6 02	.....
Clyde.....	9 23	2 03	6 18	.....
Bellevue	9 38	2 18	6 32	.....
Monroeville ..lv	9 57	2 32	7 01	1 35 AM
Norwalk	10 13	2 50	7 20	1 50
Wellington	11 03	3 45	9 00	2 32
Creston.....ar	11 52	4 33	10 45	3 15
Orrville.....ar	12 20 PM	5 05	11 45 PM	3 45 *
Orrville.....lv	12 40	5 05	6 00 AM	6 00 AM
Massillon.....ar	1 20	5 45	6 40	6 40
Massillon.....lv	1 20	5 45	6 40	6 40
Valley Junc.lv.	2 10	6 45	8 00	8 00
NewCumberl'd	2 25	7 00	8 20	8 20
Sherrodsville...	2 38	7 15	9 00	9 00
Leesville	2 47	7 25	9 25	9 25
Bowerston....ar	2 55	7 35	9 40	9 40
Canal Dover.....	2 34 PM	7 02	11 30 AM	11 30 AM
New Comerst'n	3 13	7 46	12 09 PM	12 09 PM
Cambridge.....	4 08	8 37	1 02	1 02
Macksburg	5 39	.....	2 30	2 30
Marietta.....ar	6 55 PM	.....	3 38 PM	3 38 PM

WESTWARD.	No. 6.	No. 8.	No. 4.	No. 2.*
Marietta lv	7 00 AM	11 00 AM	.....	.....
Macksburg	8 18	12 05 PM	.....	.....
Cambridge.....	9 52	1 27	5 30 AM	.....
New Comerst'n	10 47	2 20	6 20	.....
Canal Dover.....	11 30	2 54	6 55 AM	.....
Bowerston.....	11 55	3 30	6 30	.....
Leesville.....	12 11 PM	3 45	6 38	.....
Sherrodsville...	12 08	4 25	6 48	.....
New Cumberl'd	12 20	4 50	7 03	.....
Valley Junc.....	12 35	5 50	7 28	.....
Massillon.....	1 20	7 10	8 15	.....
Orrville.....ar	1 55	8 20	8 55	.....
Orrville.....lv	2 00	10 15 *	8 55	.....
Creston..... lv	2 30	10 45	9 25	.....
Wellington	3 18	11 28	10 12	*
Norwalk.....	4 10	12 10 AM	11 25	7 25 AM
Monroeville	4 22	12 25 *	11 37	7 37
Bellevue.....	4 40	.....	11 55	7 53
Clyde	4 56	.....	12 10 PM	8 08
Fremont.....	5 13	.....	12 30	8 25
Oak Harbor.....	5 41	.....	12 55	8 48
Toledo.....ar	6 35 PM	.....	1 55 PM	9 45 AM

29.	27.		Norwalk & Huron.		26.	28.
P. M.	A. M.				A. M.	P. M.
5 15	11 40	.....	ar..... Huron..... lv	.....	6 25	2 05
5 02	11 25	.....	...Fries Landing.....	.....	6 38	2 18
4 50	11 10	.....	.....Milan.....	.....	6 52	2 35
4 30	10 45	.....	lv ...Norwalk.....ar	.....	7 15	3 00

* Daily.

This road is now open through from Toledo to Bowerston, connecting with the Pennsylvania System for all points East.

THROUGH CAR SERVICE.

Between Toledo, Cambridge and Marietta.
" " and Bowerston
" " and Akron, Youngstowa and Pittsburgh.
" Chicago, Akron, Youngstown and Pittsburgh.

M. D. WOODFORD, Gen'l Manager. JAMES M. HALL Gen'l Pass. Agt.

Scioto Valley Railway

TIME TABLE.

In effect July 19, 1885.

THE SHORT LINE TO ALL POINTS

North and South, East and Southeast, West and Northwest.

TRAINS GOING SOUTH

STATIONS.	No. 2.	No. 4.	No. 6.
Columbus.....Lv	6 25 a.m	11 45 a m	5 30 p.m
Valley Crossing...	6 48 "	12 08 p.m	5 52 "
Lockbourne	7 00 "	12 20 "	6 06 "
Ashville.....	7 15 "	12 36 "	6 24 "
Circleville.....	7 45 "	1 05 "	6 50 "
Kingston	8 08 "	1 32 "	7 13 "
Chillicothe	8 40 "	2 05 "	7 55 "
Sharon	9 22 "	2 47 "	8 43 "
Waverly.....	9 32 "	2 57 "	8 54 "
Piketon	9 45 "	3 11 "	9 08 "
Big Run.....	10 08 "	3 28 "	9 25 "
Lucasville.....	10 25 "	3 46 "	9 45 "
Portsmouth	10 50 "	4 10 "	10 10 "
Sciotoville.....	11 08 "	4 28 "	10 27 "
Wheelersburg	11 15 "	4 34 "	10 35 "
Haverhill	11 38 "	4 54 "	10 55 "
Hanging Rock.....	11 50 "	5 06 "	11 05 "
Ironton	12 02 p.m	5 17 "	11 17 "
Petersburg	12 15 "	5 30 "	11 30 "
Ashland.....Ar	12 50 p m	6 05 p.m	12 05 a.m

Trains Nos. 2 and 4 daily, except Sunday.
Train No. 6 daily.
Train No. 6 takes supper at Chillicothe.

TRAINS GOING NORTH.

STATIONS.	No. 1.	No. 3.	No. 5.
Ashland Lv	2 20 a.m	7 30 a.m	4 55 p.m
Petersburg	2 55 "	8 05 "	5 30 "
Ironton	3 08 "	8 18 "	5 43 "
Hanging Rock	3 20 "	8 30 "	5 55 "
Haverhill.....	3 31 "	8 41 "	6 06 "
Wheelersburg	3 50 "	9 03 "	6 26 "
Sciotoville.....	3 56 "	9 10 "	6 31 "
Portsmouth.....	4 10 "	9 25 "	6 45 "
Lucasville.....	4 34 "	9 50 "	7 12 "
Big Run.....	4 51 "	10 08 "	7 31 "
Piketon.....	5 07 "	10 23 "	7 48 "
Waverly.....	5 21 "	10 36 "	8 03 "
Sharon	5 32 "	10 47 "	8 15 "
Chillicothe	6 35 "	11 55 "	9 00 "
Kingston	7 04 "	12 22 p.m	9 27 "
Circleville.....	7 27 "	12 47 "	9 50 "
Ashville.....	7 55 "	1 12 "	10 13 "
Lockbourne	8 14 "	1 29 "	10 29 "
Valley Crossing...	8 26 "	1 43 "	10 43 "
Columbus.....Ar	8 50 a.m	2 05 p.m	11 05 p.m

Train No. 1 daily.
Trains Nos. 3 and 5 daily, except Sunday.

COUPON TICKETS, by the best routes and to all principal points in the United States and Canada, can be found at the following Stations: Columbus, Circleville, Kingston, Chillicothe Waverly, Portsmouth, Ironton, A. C. & I. Ashland.

For further information relative to rates, connections and through time, call on your Ticket Agent, or address J. ROBINSON, JNO. J. ARCHER, Receiver. Gen'l Pass. & Ticket Ag't, Columbus, Ohio.

Ft. Wayne, Cincinnati & Louisville RAILROAD.

THE POPULAR ROUTE

BETWEEN THE

NORTH and SOUTH

THE DIRECT ROUTE TO OR FROM FORT WAYNE, INDIANAPOLIS, TERRE HAUTE, EVANSVILLE, AND ST. LOUIS.

13 MILES SHORTER —BETWEEN— 13

Fort Wayne and Indianapolis

Than any other Route.

22 MILES SHORTER AND QUICKER 22

By **3 HOURS**, Between

Louisville and Fort Wayne.

No change of Cars —BETWEEN—

Cincinnati and Fort Wayne,

Via White Water Railroad.

All trains arrive and depart from Central Union Passenger Station Cincinnati, Corner Third Street and Central Avenue.

DIRECT CONNECTION

At Fort Wayne with L. S. & M. S. Trains for all points North and East.

Ask for Tickets —VIA— Ft. Wayne, Cincinnati & Louisville Railroad.

For sale by all Agents of connecting lines. EAST, WEST, NORTH AND SOUTH.

W. W. WORTHINGTON, Gen'l Supt. ROBT. F. KINNAIRD, Gen'l Ticket Agent, FORT WAYNE, IND.

Spring Emigration.

If you expect to go West this Spring, be sure to get your tikcets via the

BEE LINE.

C. C. C. & I. Ry. I. & St. L. Ry. D. & U. R. R.

THE THROUGH

Reclining Chair Car Route.

No other Line can offer you the superior accommodations, quick time and through car service presented by this route, by which Through Tickets are sold as cheap as any.

To the East!

This Line leads all competitors in affording its patrons the most superior Through Car service to

NEW YORK, BOSTON,

and all Cities throughout the EASTERN STATES, giving its patrons the option of going via

NIAGARA FALLS.

A SOUTH-BOUND TRAVELER

or Tourist will find no other Line which can compare with this in

LUXURY, EASE,

and Through Car accommodations.

Apply to Ticket Agents for detailed information.

D. B. MARTIN, Gen. Pass. Agent.

The Picturesque Lehigh Valley Route.

Three through trains with Pullman cars attached are now run via by this beautiful scenic route, between Suspension Bridge, Buffalo, New York and Philadelphia, leaving Suspension Bridge 8:18 A. M. 4:10 and 7:45 P. M., Buffalo 9:00 A. M. and 4:40 and 10:00 P. M., connecting with all trains from the West.

Passengers between the East and West passing over the famed LEHIGH VALLEY ROAD will experience the pleasure of a trip through the most magnificent and picturesque scenery in the world, presenting an ever varying panorama of delightful surprises.

Double track, steel rails, magnificent road bed and unrivaled equipment, all combine to make the LEHIGH VALLEY the favorite and most desirable route between the East and the West.

Anthracite Coal is used entirely, guaranteeing to passengers perfect freedom from the dense volumes of smoke that so greatly annoy passengers on lines using Bituminous Coal.

E. B. BYINGTON, Gen'l Pass. Agent, Mauch Chunk, Pa

New York, Penn. and Ohio Railroad

N.Y., L.E. & W. R.R. CO. LESSEES.

New York, Boston and the East.

THE SHORTEST AND QUICKEST ROUTE TO PITTSBURGH, WASHINGTON AND BALTIMORE, AND THE SOUTHEAST.

Change of time goes into effect Jan. 9, 1887.

Central, or Ninetieth Meridian time, 33 minutes slower than Cleveland city time.

Until further notice trains will leave from the New Central Depot, South Water Street and Viaduct, as follows:

	Depart.
No. 62, Mahoning Valley Accommo .....†	6 45 a m
No. 72, New York Express,.....*	8 25 a m
No. 72, Fast Pittsburgh Express .....*	8 25 a m
No. 64, Fast New York Express.....*	2 45 p m
No. 64, Pittsburgh Express.....*	2 45 p m
No. 66, Mahoning Valley Accommo .....*	4 30 p m
No. 68, Pittsburgh Express.....†	11 10 p m
No. 70, Pittsburgh Local Express.....*	11 40 a m
	Arrive.
No. 61, New York Express.....†	5 45 a m
No. 61, Pittsburgh Express.....†	5 45 a m
No. 65, Fast New York Express.....*	12 05 a m
No. 65, Pittsburgh Express,.....*	12 05 a m
No. 67, Pittsburgh Express.....*	1 18 p m
No. 63, New York Express... .....*	6 40 p m
No. 63, Pittsburgh Express, ...*	6 40 p m
No. 69, Pittsburgh Local Express .....†	9 25 p m
No. 77, Youngstown Local .....†	8 10 a m
No. 13, Erie Express, carrying express matter only, from all points East and South-east, carries no passengers.....‡	12:05 p m

* Daily. † Daily, except Sunday. ‡ Except Monday.

☞ This is the only route by which passengers can reach Corry, Elmira, Binghampton, New York City and intermediate points without change. One change to Boston and New England cities.

Baggage checked through to all points East.

Through tickets and information regarding the route can be obtained at office, 224 Bank street, and at Depot N.Y., P. & O. Railroad, South Water street and Viaduct, Cleveland. Ship by Erie Express.

J. N. Abbott, General Passenger Agent,
A. E. CLARK, Ass't Gen'l Pass. Agent, Cleveland, O.
J. R. SHALER, General Superintendent, Cleveland, O.
M. L. FOUTS, Passenger Agent, 224 Bank Street, Cleveland, O.

Cleveland & Marietta R. R.

New Through Line Between the Ohio River and the Great Lakes.

The popular line to Chicago, St. Paul, Milwaukee, Minneapolis, and all points in the Great Northwest. Direct connection for the Pennsylvania Oil Fields and all points East and Southeast. December 5, 1886.

GOING NORTH. No. 4.	No. 6.	STATIONS.	GOING SOUTH. No. 5.	No. 3.
6 00 AM	10 30 AM	lv..Marietta..ar	8 20 PM	4 33 PM
6 22	10 51s	ar..Caywood ..lv	7 56	4 11
6 28s	.....	.....Stanley.....	7 50	4 05s
6 43	11 12s	.....Whipple.....	7 35	3 50s
6 54	11 22s	.....Warner.....	7 25	3 40
7 08	11 35	.....Elba.....	7 10	3 27
7 18	11 43 PM	...Macksburg...	7 00	3 18
7 28	11 51	...Dexter City...	6 50	3 09
7 53	12 14	.....Caldwell.....	6 25	2 46
8 03	12 24	..Belle Valley...	6 15	2 36
8 28	12 47	..Pt. Pleasant...	5 51	2 12
8 39	12 58	.....Byesville.....	5 40	2 01
8 55	1 15	...Cambridge....	5 26	1 48
9 21	1 40	...Kimbolton ...	4 58	1 19
9 52	2 10	N. Comerstown	4 26	12 38
10 10	2 31s	..Phillipsburg..	4 06	12 18
10 14	2 35s	...Black Band...	4 02	12 14s
10 28	2 48	...Canal Dover..	3 48	12 00
10 50	3 10 PM	.. Valley Junc...	3 28 PM	11 35 AM
11 52 AM	4 05	.....Canton.....		11 30
12 50 PM	5 05	..... Akron.....		10 47
2 15	6 30 PM	... Cleveland.....		9 52
8 00	3 30 AM	..... Buffalo.....		8 30
2 00	.....	... .Orrville.....	12 40 PM	6 00 AM
2 30	.....	.....Creston.....	11 52	11 45
4 10	.....	.....Norwalk.....	10 13	7 20
6 35	.....	.....Toledo.....	7 45 AM	4 45 PM
3 30 PM	7 10 PM	....Columbus....	.....	.....
6 30 AM	7 15 AM	.....Chicago.....	.....	.....
2 55 PM	5 55 PM	...Pittsburgh...	.....	.....
7 10 AM	7 30 PM	....New York ..	.....	.....

No. 8.		No. 1, Accom.
2 50 PM	lv.....Marietta.....ar	11 25 AM
3 23	.....Caywood.....	10 51
3 36	.....Stanley.....	10 40
3 50	.....Whipple.....	10 20
4 05	.....Warner.....	10 05
4 23	.....Elba.....	9 44
4 35	.....Macksburg.....	9 32
4 48	.....Dexter City.....	9 20
5 25	.....Caldwell.....	8 45
5 40	.....Belle Valley.....	8 30
6 25	....Point Pleasant.....	7 45
6 43	.....Byesville.....	7 21
7 00	ar .....Cambridge.....lv	7 00

No. 9 leaves Canal Dover 6 05 am, Newcomerstown 8 am, Post Boy 8 15 a m, Guernsey 8 30 am, Kimbolton 9 21 am, Millers 9 40 a m, Oldham's 9 55 a m, Cambridge 10 40 a m, Caldwell 1 20 pm, Marietta 5 05 p m.

No. 10 leaves Marietta 6 15 am, Caldwell 9 50 am, Cambridge 11 45 am, Oldhams 11 58 am, Millers 12 10 pm, Kimbolton 12 25 pm, Guernsey 1 06 pm, Post Boy 1 20 am, Newcomerstown 1 55 p m, Canal Dover, 3 38 pm.

No. 19 leaves Canal Dover 6 am, Newcomerstown 6 50 am, Post Boy 7 03 am, Guernsey 7 13 a m, Kimbolton 7 30 am, Millers 7 43 am, Oldhams 7 55 am, Cambridge 8 10 am.

s Stop on signal only.

Connections made with all lines at junction points for all important cities east or west.

A. T. WIKOFF, Gen'l Manager.
F. C. JEWETT, Gen'l Pass. Agent.

Vises.

Solid box ..... 50&10&5@60
Parker's ..... discount 20@25
Prentiss ..... " 20 &5@25
Stephen's ..... " 25
Saw Filers, Wentworth's ..... dis20&10
Saw filers, Stearn's ..... dis 40

Washer Cutters.

Smith's Patent ..... ₱ doz $12 00, dis 20&10&10
Johnson's ..... ₱ doz $11 00, dis 33⅓
Penny's ..... ₱ doz Pol. $14 00; Jap'd. $16 00, dis 55
Appleton's ..... ₱ doz $16 00, dis 60&10
Bonney's ..... dis 30&10

Well Wheels.

8 in., $2.00; 10 in., $2.50; 12 in., $3.25

Wire. New List Jan.18,1884

Brass and Copper ..... discount 25@25&5
Bright and annealed, Nos. 0 @18 ..... dis 70&5
" " Nos. 19 @ 26 ..... dis 72½
" " Nos. 27 @ 36 ..... dis 75
Coppered Nos. 0 to 18, market list ..... dis 65&10
Galvanized Nos. 0 to 18 " " dis 60&10
Tinned market Nos. 0 to 18 ..... dis 55
Cast steel ..... dis 50
Tinned Broom Wire dis70
Annealed Fence, Nos. 8 and 9 ..... dis70
Annealed Grape, Nos. 10 to 14 ..... dis 70
Stubs Steel Wire regular ..... $6 00.@lbdis 30

Wrenches.

Coe's genuine, cash in 10 days ..... 55 & 3
Girard Standard ..... discount 70&10
Agricultural ..... discount 80& 10@80&10&5
Mechanics' ..... dis 55&10 & 3
American adjustable ..... dis 45
Coes' pattern, malleable ..... dis80&10@80&10&5
Coes' pattern, wrought ..... dis 80&10@80&10&5

TINNERS' STOCK.

Tin.

Banca ..... per lb. 23¾@24¼
Straits ..... " 23½@24
English ..... " 23¾@24¼
Bar ..... 24½@25

Spelter.

American, cash, ₱ lb ..... 4⅝@5c

Charcoal Tin Plate.

IC 12x12 225 sheets ..... $5 00@6 87½
IX 14x20 112 sheets ..... 6 00@9 37½
DC 12½x17 100 sheets ..... 5 00@5 75
DX 12½x17 ..... 6 00@7 25
IC 10x14 225 sheets ..... ₱ box 5 00@6 87½
IC 20x28 112 sheets ..... 10 25@14 75
IX 10x14 225 sheets ..... 6 00@9 37½
IX 12x12 225 sheets ..... 6 0 @9 37½
For each additional X add $1 25@$2 00.

Coke Tin Plate.

	Best	Ordinary
IC 10x14 } IC 14x20 }	$4 50	$4 40@4 50
IC 12x12	4 75	4 60@465
IC 10x20 (Gutters 225 sheets)	8 00	7.25@—
IC 20x28 (112 sheets)		9@950

Solder.

Half and Half, in bars warranted ..... 15@15½
No. I. Refined ..... 12@13

Zinc.

Zinc, cask ..... 5 75@5 95
Zinc, open ..... 6@7

LEAD.

Pig ..... 4¾@5c
Bar, ₱ lb ..... 5¼@5½c
Pipe, ₱ lb ..... 7c, discount 20 per cent
Sheet, ₱ lb ..... 7½c, discount 20 per cent
Tin-lined pipe ..... 15c, discount 20 per cent
Block ..... 40c, discount 20 per cent
Chilled Shot ₱ bag 25 lbs 1 65

Babbit Metal.

N P U ..... ₱lb 6½@7c
X 10c
XX 15c
JB 20c

COPPER.

Lake Ingot ..... 11¼@11½
Baltimore ..... 10¼@10½
Arizona ..... 10@10¼

IRON AND STEEL.

Flat Bar.

1½ to 4 by ⅜ to 1 inch 2 20
4½ to 6 by ⅜ to 1 inch 2 3
1¾ to 6 by 1⅛ to 1 inch 2 0
1¼ &1⅜ by ⅜ to ¾ 2 30
1 &1⅛ by ⅜ to ¾ 2 40
⅝, ¾ and ⅞ by ⅜ to ¾ 2 60

Round and Square.

1 to 1⅜ inch 2 20
2 to 2⅝ 2 4
2¾ to 3¼ inches 2 7
3⅜ to 4 ..... 3 30
4¼ to 4½ 3 70
4¾ to 5 ..... 3 90

Oval.

⅝ to 1¼ inch 2 60
⅞ to ¾ 2 80
⅞ 3 00
⅝ 3 40

Hoops.

1½ to 4, Nos. 13 to 15 .....
1¼ to 2, Nos. 16 to 18 .....
1 and 1⅛, Nos. 13 to 15 .....

Heavy Band.

1½ to 6 by ¼ and 5-16 inch 2 40
1 to 1⅜ by ¼ and 5-16 inch 2 50
⅝ to ⅞ by ¼ and 5-16 inch 2 70
⅞ to ⅝ by ¼ and 5-16 inch 3 20

Half Oval and Half Round.

1½ to 3 inch 3 30
⅞ to 1¼ 2 90
⅝ to ¾ 3 40
¾ 3 70
⅝ 5 20

Light Band.

1½ to 6 by ⅛ to 3-16 ..... 2 70

Sheet Iron.

No. 22 to 24 ..... 3 00
No. 25 to 26 ..... 3 10
No. 27 ..... 3 20
No. 28 ..... 3 40

Machinery Steel.

	Crucible.	Bessemer & open-h'rth.
Ordinary sizes, ⅜ to 2 in. round	4	3¼
5-16 and 2½ to 3 in	5	4½
¼ and 3½ to 6 in	6	5½
7-32 in	7	6½
3-16 in	9	8¼

Square, Flat and Octagon, ½c. extra throughout list.
Cut to specified lengths, ½c. extra.

Hammer Cast Steel.

	Cts. ₱ lb.
Crucible cast steel	5
Open-hearth steel	4

Steel.

Best Quality Refined Cast Steel—Square, Flat Octagon and Round. Cents.

⅝ to 2 inches, inclusive 9
1-16 and 2⅛ to 3 inches 10
¼ and 3½ to 4 inches 11
7-32 and 4½ to 5 inches 12
3-16 and 5½ to 6 " 14½
5-32 " 18½
⅛ " 25½
Oil well steel forgings 18½

Sheet Steel.

	Crucible Best.	Crucible 2d. Qual.	Crucible 3d. Qual.	Bessemer & open-h'rth.
To 21 gauge	9c.	8c.	6c.	5

1c. extra for each additional gauge. Cut to multiples or specified lengths, ½c. extra.

Miscellaneous Cast Steel.

Augur and augur bit 3
Axle steel for wagons 3
Frog points and plates 5½
Frog size bars 5
Pick, hammered 5
Skate Steel 4½
Mattock, beveled 3
Table cutlery 3½
Table Cutlery, beveled 4
Trap spring steel 6
Pike and cant hook 7
Coal and granite wedge 7
Roller 5½
Spindle, subject to machinery classification. 5½
Trap spring steel 6
Forged crank pins and lathe spindles 7½
Piston rods, plain 4
Piston rods, forged to shapes 7½
Slide bars, plain 5
Slide bars, forged to shapes 7½

Open Hearth or Bessemer.

Boiler fire-box and flue sheets not less than 3-16 thick 4c
Boiler, fire-box and flue sheets, not less than ⅛ thick 5c
Circulars and semi-circulars, when ordered separately 6c
Smoke stack, to shape 5c
Locomotive tank steel 4c

File Cast Steel.

Square, round, half round and flat bastard, 8-inch and over .....
Mill saw, 8-inch and over 5c
Taper, 3½ inch and over 6c
Horse and shoe rasp 5c

Spring Cast Steel.

Spiral, taper, cut to lengths 4c
..... 5½c

Tire Cast Steel.

1x¼ and over 6½c
1x3-16 ⅜x3-16 and ¼ 10
1 and 13-16x⅛ and 5-32, ¾x3-16 and 5-32 ..... 9c
¾ and ⅝x⅛ and 3-32 and 12g 10c
Solid safe cast steel 4c
Three and five ply cast steel 5c

Agricultural Implement Cast Steel.

Fork and rake, crucible 4½
Horse rake steel, cut to lengths, crucible 5
Hoe, crucible 5
Corn stalk cutter, beveled 4½
Beveled hoe and shovel steel, in bars 4½
Crucible plow steel, in slabs 4½

Bessemer and Open-hearth. rates

Spring 3¼c
Spring spiral and taper, cut to lengths 3½
Tire, 2-16 thick and above 2¾c
Toe calk ..... 3 c
Plow 2½c
Axle billets ..... 2 c
Sleigh shoes 2½c
Cutter shoe, cut to length and tapered 3c
Scythe back steel 3½c
Grain drill bars 2½c
Grain drill points 3½c
Rolling coulter blanks, cut and punched 6c
Thresher Teeth 3½
Rolled hammer billets 2½c
Thresher steel 2½c

Terms.—Four months 3 per cent. discount for cash, if remitted within 30 days

English Steel.

Best cast ..... ₱ lb 15c
Extra cast ..... 16½@17c
Round machinery 10c
Circular Saw Plates 14c
Swaged, cast 16c
Best double shear 15c
Blister, 1st quality 14c
German steel, best 10c
2d quality 9c
3rd quality 8c
Sheet cast steel, 1st quality 15½

Boiler Rivets.

½, ⅝, 11-16 and ¾ inches diameter 4 00
Bridge ½, ⅝, 11-16 and ¾ inch diam 4 00

Rolls and Castings.

Furnace floor and straightening plates 1½c
Housings and castings not otherwise specified 1¾c
Guide plates 2½c
Spindles and coupling boxes 1½c
Sand rolls and pinions, large size ..... 2 c
Sand rolls and pinions, small size 2½c
Pipe mill castings ..... 3 c
Rolling mill castings under 50lb ..... 2 c
Spur and bevel wheels, large ..... 3 c
Spur and bevel wheels, small 3½c
Pulleys up to 30 inches ..... 4 c
Pulleys over 30 inches 3½c
Engine castings, light 3½c
Engine castings, heavy 2½c

SCRAP IRON AND OLD METAL

	Net Ton.
No. 1 R. R. wrought scrap	$23 00
No. 1 wrought scrap	20 00
No. 1 Machine cast scrap	15 00
Stove plate (free from burnt iron)	10 50
Grate bars	11 00
Pipes and flues (Clean)	13 00
Tank iron	12 50
Hoop and band iron	10 00
Iron axles	28 00
Light sheet iron	10 00
Axle turnings	16 00
Wrought turning (free from cast)	15 00
Wrought iron, oily drillings	14 00
Cast borings	11 00
Malleable iron	10 50
Uncut wrought iron boilers	10 00
Steel boiler plates	14 50
Old iron T rails	gross tons $27 00
Old steel rails	23 00
Car wheels	20 00
Old copper	per lb 7
No. 1. H. red Brass	8¼
Heavy yellow brass	6½
Light yellow Brass	6
Scrap Zinc	3
Tea Lead	3
Heavy Lead	3¼

PIPE, WROUGHT.

Standard Wrought Iron Lap Welded Steam and Gas Pipe.

	Inside Diameter. Inches.	Wt Per Foot.	Price Per Foot Black.	Price Per Foot Galvan'd	Thickness Inches.
Butt-Welded.	⅛	24	0 04	0 05	.068
	¼	42	0 04	0 05	.088
	⅜	56	0 04	0 05½	.091
	½	84	0 05	0 07	.109
	¾	1 12	0 07	0 09	.113
	1	1 67	0 09½	0 12½	.134
	1¼	2 24	0 12½	0 17	.140
Lap Welded.	1½	2 68	0 22	0 25	.145
	2	3 61	0 28	0 32	.154
	2½	5 74	0 44	0 49	.204
	3	7 54	0 58	0 64	.217
	3½	9 00	0 70	0 86	.226
	4	10 66	0 85	1 00	.237
	4½	12 24	1 00	1 25	.246
	5	14 50	1 20	1 50	.259
	6	18 76	1 65	2 00	.280
	7	23 27	2 00		.301
	8	28 18	2 75		.322
	9	33 70	3 70		.344
	10	40 06	4 75		.366
	11	45 02	5 75		.375
	12	49 00	6 50		.375
	13	54 00	7 75		.375
	14	58 00	9 00		.375
	15	.....	10 00		.375

Discount, (car load lots) butt-welded ⅛ inches to 1¼ inches plain ..... 35 per cent
Ditto galvanized ..... 25 per cent
Discounts (car load lots) lap-welded 1½ inches to 15 inches plain ..... 54½ per cent
Ditto galvanized ..... 35 per cent
Discounts on less than car lots 2½ per cent. less.
Discounts on pipe cut to specified lengths depends on size and waste, ordinarily 5 per cent lower than random.

Plumbers,' Steam and Gas Fitters' Supplies.

Grey Iron Fittings ..... discount 70
Steam Brass Goods ..... discount 65
Water Brass Goods ..... discount 60
Galvin Gate Valves ..... discount 40
Register Gauge Cocks ..... net 50
Steam Gauges ..... discount 40
Steam Gauges 5 inches net dial per doz 24 00
Scotch Glass Tubes ..... discount 75
Tools ..... Special
Soil Pipe & Fittings, Mott's List ..... discount 55

Boiler Tubes.

Discount ..... 42½ per cent

COAL.

WHOLESALE.

Wholesale f. o. b. cars at Cleveland:

Carbon Hill and Monday Creek ..... $2 10@2 25
Massillon ..... 2 50@2 65
Palmyra, lump ..... 2 95@3 10
Brier Hill ..... 2 75@3 00
Pittsburgh ..... 2 25@2 50
Salineville ..... 2 00@2 25
Tuscarawas ..... 2 00@2 25
New Hazelton 2 00
New Hazelton, mix ..... 1 15@1 20
" " nut ..... 1 75@1 85
Connotton ..... 2 00@2 25
Connotton, mix 1 20
" nut ..... 1 75@1 85
Anthracite grate 5 04
Anthracite egg 5 04
Anthracite stove 5 27
Anthracite chestnut 5 27

RETAIL.—Delivered.

Massillon Lump 3 65
" Nut 3 40
Carbon Hill and Monday Creek, lump 3 50
Carbon Hill and Monday Creek, nut 3 25
Straitsville, lump 3 40
Straitsville, nut 3 15
Palmyra Lump ..... 5 75@4 00
New Hazelton Lump 2 75
New Hazelton Nut 2 50
Osnaburg Lump 2 75
Osnaburg Nut 2 50
75c less on cars by car load.
Anthracite Stove and Chestnut 6 00
Egg and grate 5 75

OILS.

Pure Oils. Packages included.

Sperm, winter bleached per gal ..... 1 15@1 20
Whale, winter bleached per gal ..... 60@65
Straits ..... 37@40
Bank ..... 35@38
Lard oil, extra W. S ..... 53@58
do No. 1 do ..... 45@48
do No. 2 do ..... 40@43
Tallow oil ..... 60@65
Neatsfoot oil, pure ..... 90@1 00
do No. 1 ..... 65@75
Linseed oil, raw ..... 46@49
do do boiled ..... 49@52
Cotton seed oil, white ..... 47@50
do do yellow ..... 40@43
West Virginia lubricating 28 deg ..... 10c@15c
Paraffine oil, winter pressed ..... 15@18
Capitol Cylinder 35
Model do 30
Eldorado Engine 23
Turpentine, per gal 38
Leader Cylinder 70

Pittsburgh & Lake Erie Railroad.

On and after November 16, 1886, passenger trains will depart from and arrive at the Pittsburgh and Lake Erie Depot at Pittsburgh, as follows, Central time:

P. & L. E. R., R. Depart for—

No. 7, Cleveland, Bradford and East ..... 6 30 a.m
No. 5, Buffalo, St. Louis, Cleveland ..... 7 20 a.m
No. 51, Beaver Falls Accommodation ..... 8 30 a.m
No. 1, Buffalo, New York, and all New England points ..... 10 20 a.m
No. 3, Chicago, Cincinnati, St. Louis, ... 12 55 p.m
No. 9, Buffalo Express ..... 3 40 p.m
No. 11, Beaver Falls Accommodation ..... 5 50 p.m

Arrive from—

No. 8, Buffalo and Cleveland Night Exp. 5 55 a.m
No. 10, Beaver Falls Accommodation ..... 7 28 a.m
No. 2, Youngstown Accommodation ..... 9 10 a.m
No. 12, Chicago, Cincinnati & St. Louis, 12 45 p.m
No. 50, Beaver Falls Accommodation ..... 1 35 p.m
No. 6, Buffalo Express ..... 5 10 p.m
No. 4, Cincin., St. Louis and Cleveland, 7 50 p.m

Pittsburgh & Lake Erie trains Nos. 2, 3, 5, 9, and 12 daily.

W. C. QUINCY, General Manager.
R. W. JONES, Master of Transportation.
GEO. REPPERT, Ticket Agent.
A. D. SMITH, Gen'l Pass. Ag't, Pittsburgh.

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ROLLER CHAIN BELTING CO.,
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Manufacturers of

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Conveyors,
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For handling
COAL,
ORES,
GRAIN,
Barrels, Boxes, &c

Send for 1887 Illustrated Catalogue.
Correspondence Solicited

Engineers Don t be Deceived. The Cyclone Steam Flue Cleaner is the only Cleaner made giving steam a spiral motion the entire length of the tubes.
Crescent Mfg. Co., CLEVELAND, O. [24

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LOOKING FOR
LOCATIONS.

ADDRESS THE
BOARD OF TRADE,
Pittsburg, Crawford Co., Kan.

In the Great Western Coal Fields. Town has three Great Railway Systems, and others in course of construction. Coal from one cent per bushel to five cents Pittsburg is destined to be the largest manufacturing town in the Southwest. Good schools, and surrounded by good farming district.

THE IRWIN & REBER
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EXPANDING WATER CONDUCTOR.
MANUFACTURED BY THE
S. S. S. Conductor Co.
LIMITED,
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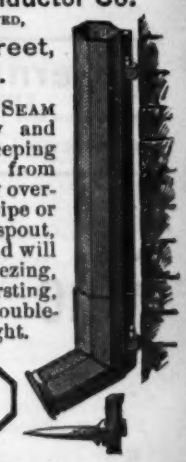

THE STANDING SEAM allows of an easy and secure fastening, keeping the pipe far enough from the wall to make any overflow from the eave pipe or head, run down the spout, and not the wall; and will open, in case of freezing, so as to prevent bursting, and still remain double-locked and water-tight.

Made in 6 foot lengths of a single sheet of
SOFT STEEL,
Galvanized, Kalamined or Leaded.

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For holding drills and reamers for lathe work. Prevents breaking or slipping. Can also be used for drilling and reaming holes by hand, and for reaming holes under drill presses, etc. Five holders in a set. Made with double handle, when required.
Walker Mfg. Co., CLEVELAND, O.

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GRINDSTONES,

Mounted Grindstones,

Of Any Size, and Adapted to All Kinds of

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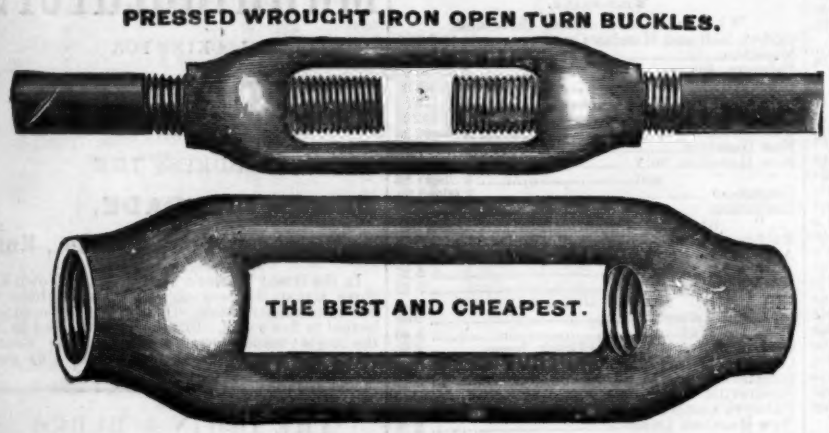

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CLEVELAND, O.

Patterns and Models of Wood and Metal

LIGHT MANUFACTURING.

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Pin Bearings for Roller Skates.
TRADE SUPPLIED.

D. S. HITCHCOCK & CO., Crossing C. & P. & N. Y. C. & St. L. R. R., CLEVELAND, O. 63-6m

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MANUFACTURER OF

Fine Crucible Tool Steel,

FOR ALL PURPOSES.

Self-Tempering Steel

For Lathe, Planer and Nailers' Tools. Extra Refined Hammered Iron. All Goods Warranted.

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THE ARMSTRONG VERTICAL STEAM ENGINE

WITH HEATER AND STEEL BOILER.

The Best Engine Made

and will furnish MORE POWER with less fuel than any other engine OF SAME SIZE. The only Vertical Engine made having

An All Steel Double Rivetted Boiler.

Those who want an Engine of from TWO to FIFTEEN horse power, should send for our Illustrated Catalogue and Price List.

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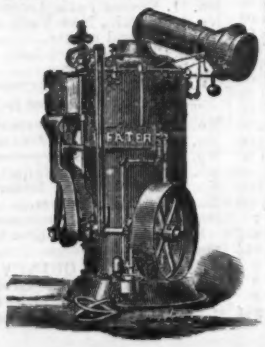
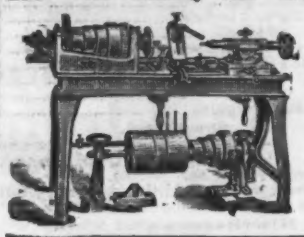


Fox, Turret and Speed



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For upright or horizontal boilers.

The most Economical Flue Cleaner in the market There is no loss of steam in changing from one flue to another. Satisfa tion guaranteed. Will send to any responsible party on thirty days trial,

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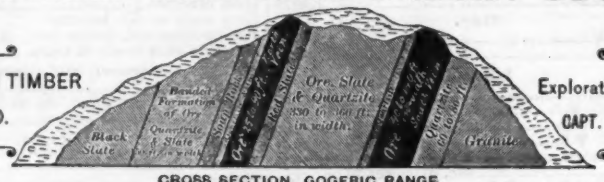
MINING and TIMBER LAND.



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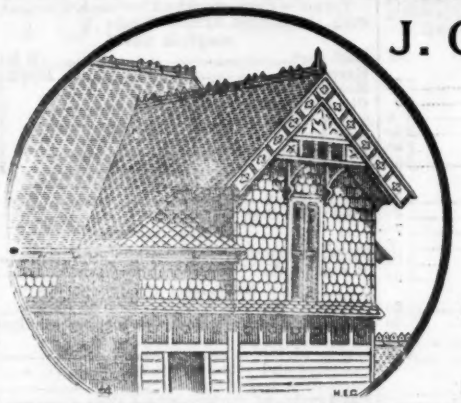

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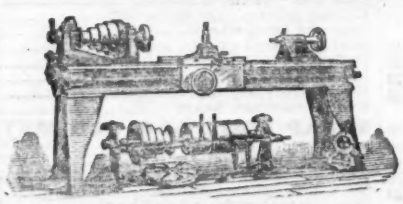

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16-Inch Engine Lathes.

BEDS OF ANY DESIRED LENGTH.

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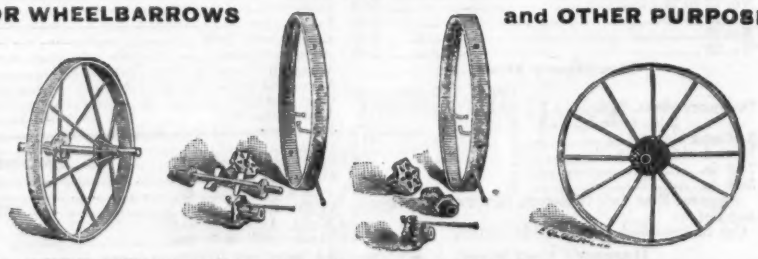
HOWELL PATENT WHEEL,

FOR WHEELBARROWS and OTHER PURPOSES.



Our SUSPENSION WHEEL is the lightest in the market, and will sustain more in proportion to its weight than any other. It is strictly suspension. The weight being sustained by a pull inward from the tire, the tension is the same on each and every spoke, or all alike. The strain is put upon all the spokes alike, and not on one at a time, as in other wheels. G. W. Howell, Mfr., Covington, Ky. [7